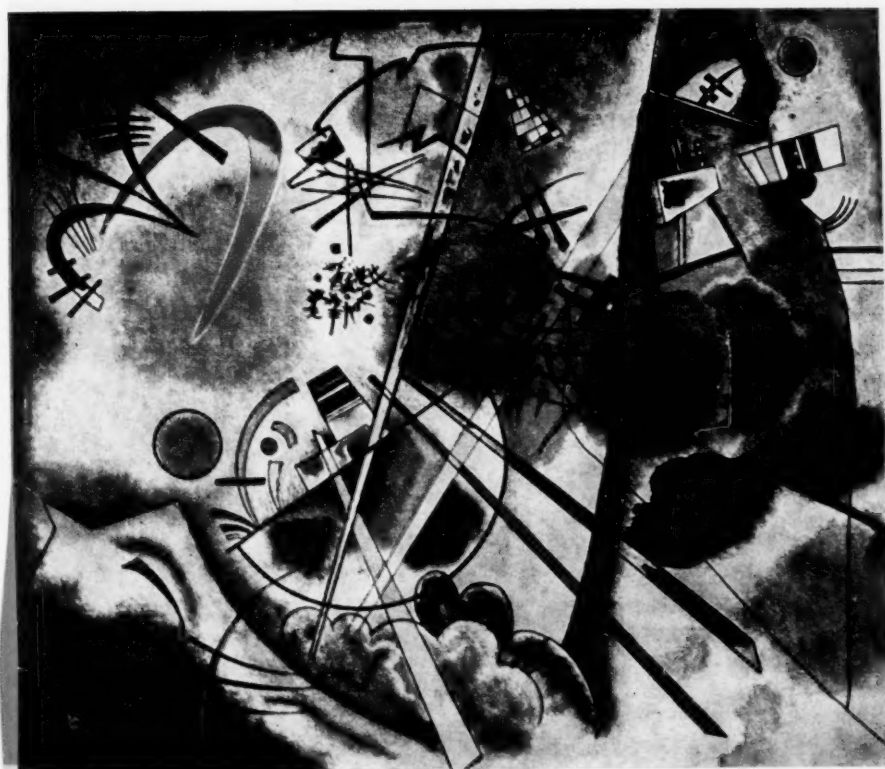


# MAIN CURRENTS

## IN MODERN THOUGHT

JANUARY

1947



LITTLE DREAM IN RED

By

Wassily Kandinsky

# MAIN CURRENTS IN MODERN THOUGHT

*A co-operative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.*

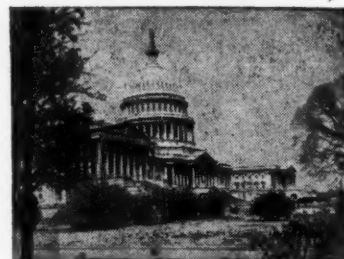
VOL. 5 - NO. 1

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\$3 A YEAR

*"Ah, but a man's reach should exceed his grasp, or what's a heaven for?"*

—BROWNING



## NEW EDUCATIONAL REQUIREMENTS TO ENSURE THE GENERAL WELFARE IN A CONTEMPORARY DEMOCRATIC SOCIETY

This issue of MAIN CURRENTS is entirely given over to a discussion of the role of an adequate conceptual education, and to description of techniques intended to make such an education possible. It may be regarded as an appeal on behalf of the children and youth of the world, that they may be offered in school and college an opportunity to hear the truth which is alone the surety of freedom. This number also serves as a summary of our past issues, and an exposition of our policy.

### CONCEPTS, AND THE WORLD CRISIS.....*Our Editorial Policy*

Part I The Realization of New Needs—Historical and Practical Considerations—A new Attack upon the Problem

Part II Reservations—A Selected Principle—The Course of the Argument

Part III The Task is Urgent

### READING TOWARD CONCEPTS.....*A Reasoned Bibliography*

The Two Materialisms—Practical Aspects—The Main Theme in Reading—Critical Events in Physics, and Notes on the Physical Field. To be continued in subsequent issues in reference to Astronomy, Geology and allied sciences, Chemistry, Biology, Psychology, and Anthropology, as well as critical social, economic, and historical events from this conceptual point of view; certain contemporary philosophers; three topics of new importance (mathematics, harmonics, linguistics); re-evaluations in philosophy; summaries by experts; and principles common to the arts, philosophy, religion, and science). The following special articles on Art and on Comparative Religion, in this issue, carry brief preliminary bibliographies:

### ART NEARS FULL CIRCLE.....*Louis James*

### THERE IS A WORLD RELIGION.....*Edited by E. B. Sellon*

ACKNOWLEDGEMENT: Our cover bears a color plate by Kandinsky generously provided to our readers by the Solomon R. Guggenheim Foundation, through the courtesy of the Director, Hilla Rebay. Under her supervision is being issued another volume in the series devoted to Kandinsky as the chief founder of the non-objective school. The book is entitled *Point and Line to Plane*.

MAIN CURRENTS IN MODERN THOUGHT is published quarterly to call attention to significant contributions to learning currently being made by leading workers in the multiple fields into which knowledge has come to be classified. It relates these advances to each other and to the classical and contemporary views of Eastern, European and American thinkers. It is designed to save time for the reader by providing a vantage-ground from which the whole world of knowledge may be surveyed and kept in proportion as it moves toward integration. Its editors assume that the principles of art, the universals of philosophy, the laws of Nature and Man as formulated by science, and the truths of comparative religion, can be orchestrated into a harmonic, meaningful, ethical body of teachings which can be and should be made the central core of curricular study in the educative process at all levels of development. In condensing text, square brackets [ ] indicate editorial interpolation. Three dots . . . in the text indicates a word, phrase or passage omitted in the interest of brevity or clarity. Other usages are standard. \$3.00 a year. Contributors to MAIN CURRENTS enjoy full liberty of opinion and of expression in these pages. Copyright 1947, by F. L. Kunz, Editor, Port Chester, New York, to whom all communications regarding MAIN CURRENTS IN MODERN THOUGHT should be addressed. E. B. Sellon, Associate Editor. Entered as second class matter April 13th, 1946, at the post office at Port Chester, New York, under the Act of March 3rd, 1879.

## PART I

### The Realization of the New Needs

The outbreak of the war in 1939 convinced certain democratic Americans that mankind's problems must be re-examined in terms of root causes and fundamental cures. Like all well-informed observers, these thinkers were concerned over the patent fact that the democracies were now fighting for the second time within a generation and for their very existence, and that in the same period their internal unsolved problems had become greatly intensified. It was reasonable to believe that a connection should be sought between these two circumstances.

Since this group believed that the springs of health for democracy lie in right education, they assembled in 1940 as a Conference on Science, Philosophy and Religion in Their Relations to the Democratic Way of Life, having present or at their call the leaders of thought in the United States and some from abroad. The first session of the Conference showed conclusively that the vast complex of scientific, technological and industrial advances had created a society into which the young citizen emerges quite inadequately equipped in two ways: 1.) He passes through a schooling which has no proper conceptual simplifications by which he can reduce the body of knowledge from the descriptive level—where it is of unwieldy magnitude and intolerable intricacy—to a useful and valid philosophy of the good life; and 2.) he is not able to discharge his functions politically and socially because he finds today's society as complex and unmanageable as are the educational materials.

The young citizen finds himself unable to cope with both these mazes; bewildered by the first, he is naturally overcome and defeated by the second. The conclusion derived from this is that simplification of the curricular complex would offer him the standards by which he might conquer the social issues.

The Conference was called with the prior assumption that specialization in the various departments of education made it impossible for specialists to command a common language with which to achieve the required simplification from the descriptive to the conceptual level. The first meetings in 1940 confirmed this assumption, and the third session, in 1942, was featured by a formal public announcement of this failure. The cross-purposes attendant on the stalemate led to more than one fission, and the starting of new Conferences. Although the original Conference has continued its yearly meetings and publishes an annual symposium, and though some of the daughter conferences have continued to meet throughout the war and since, the steps to achieve the required conceptual gains were taken by none of them.\*

\*See MAIN CURRENTS, April, 1946, pages 42 to 48 for an extended discussion of this whole development.

As this defect began to be apparent, many colleges and universities addressed themselves to the problem, and many secondary adjustments in method and content of education have resulted. But we must be clear on the point that *the major problem remains unsolved*. The reasons for the failure are several and have important bearing upon our present proposals, but first we must emphasize certain conclusions from the foregoing:

Leaders of American thought have realized, and publicly admitted in print, that education in the United States of America failed for many years to provide the *kind* of educational experience which the citizen requires if he is to do his duty in a modern democracy.

This discovery is a great gain. It means that *what has to be done educationally is exactly understood*, in contrast with the confusion, fear, and essential stalemate existing in social, political, and economic thinking. It means that educators recognize the conceptual breakdown of our times, and know it is impossible any longer to expect the educational system to cope at the descriptive level with the vast complex of new data and new adjustments involved in a contemporary mass-production society. Simplification at the deeper level of concepts must be achieved and made available, first in colleges and universities, then in the later years of high school, and eventually reflected into still earlier years of education.

The integration to be sought must be significant as regards the social, economic and political realities at national and world levels, as well as in the relation to the intellectual, aesthetic, and other materials of the curriculum.

The achievement must be made by, and must satisfy, university thinkers and conform to scientific requirements, yet be brought within the reach of secondary schools to reach the majority of young citizens.

The events described had their effective beginning in 1940. Shortly thereafter the war came closer, and then actually upon this country. As far as the institutions of higher learning were concerned, the war had to have first attention. During that struggle it was quite impossible for a college or university to go through the work of revising its curriculum in this fundamental sense, even if the faculty could have found the time and the principles upon which to proceed. Military requirements had to come first. The Conferences continued, as we have said, but they no longer concerned themselves with the problem of conceptual development as if it were urgent. No continuing secretariats were set up by any group to carry through a step-by-step program of conceptual gains, nor was it possible to make sustained efforts to arrive at a procedure or to state principles.



The risks we run as a nation through this educational failure had not, in 1944, come home to the leaders of the country at large, nor have they even now. Educators, philosophers, scientists, and others have shown deep concern, but principally before the crisis of feeling precipitated by the Hiroshima bombing. The public, including many persons of responsibility, has been distracted by this immediate danger to human society, and has rather generally lost to sight the fundamental problem we are discussing.

A few institutions of learning have indeed been roused to see the connection between the educational failure and the ethical and social breakdown of our times, as well as the economic and political confusion recorded daily in our newspapers. But since the war has come to its end, the engorgement of the campuses with veterans has prevented all except desultory pursuit of the lead so well given. After all, educators are the servants of the public. They have succeeded in bringing a basic problem out into the open. So much certainly is their responsibility and they have discharged it. The agencies of public communication, swamped by forces old and new, have failed to do their part. Hence the where-withal to attack their problem has not been put into the hands of the educators who have recognized the need.

Today scattered individuals and small groups work upon various secondary aspects of the central issue. A few colleges and universities have set up general colleges, basic colleges, and have made beginnings with tutorial and integration programs. These bring about some correlations within given fields, and so much in itself constitutes worthwhile advances. But all of this remains merely preliminary to the real need: systematic work offered to all students so that they can have opportunity to unite the whole front of knowledge and experience at the conceptual level. Even where a start has been made there is a recognized lack of the proper techniques. Basic integrating factors are missing. Progress must be slow for fear of adding confusion and possible misconceptions to the students' already confused thinking.

Our educators must now confront one of the most difficult tasks they have ever had to perform. They themselves have discovered the problem, and they know and proclaim what has to be done. But until the public demands that it be done, time and resources are unlikely to be provided for the work.

We stand in imminent danger within the body social, economic, and politic unless we admit the failure the educator has discovered, and unless we support him adequately in a comprehensive program to deal with the crisis at its source. We, as individuals and communities, must confront the fact that the conceptual breakdown has already led to an ethical breakdown widely diffused through the nation, and that this ethical recession is now, before our eyes, resulting in social, economic, and political disorders. We might have, and we might even win, another war, but a lasting peace would even then not be achieved unless we can solve the problem of creating its conceptual foundation. If we solve the educational problem, we may solve all others.

## Historical and Practical Considerations

Before our present public school and higher educational system came into being, we were a *frontier-coastal* colonial settlement, with local, voluntary, serviceable colleges and schools for the privileged few, as was then customary, approximately in 1650-1775. After the Revolutionary War came the conversion from a *frontier-coastal* colony to an *agrarian-frontier* democratic society, about 1775 to 1850. The educational needs of a democracy now slowly became apparent. Undertakings to satisfy these needs took shape during the latter years of the *agrarian-frontier* period. They were consciously realized and rounded out during the next social epoch (1850-1915), when the United States entered and passed through the stage of being an *industrial-agrarian* society. This means that the educational system we now have originated in a highly characterized social order.

This order has passed away. If we take the life of Horace Mann (1796-1859) as our index to the period during which the present system was being formulated, we are reminded that this time closed with the Civil War, the industrial North triumphing over the agrarian South, democratic process over slave-holding. The present school system was shaped by the same forces which produced that War, and wherever it spread it served well the kind of society the Civil War confirmed. This continued until about 1915. Now, however, we no longer have the industrial-agrarian society which was emerging in the closing years of the lives of Mann and Lincoln. The American population today, it is true, is numerically divided about evenly between farms and cities, but we have had for some years an *urban-agrarian mass-productive* society, in which the farm tends to be more and more mechanized for mass production. Corn in Iowa is about 95% sown, cultivated, cropped, shelled, stored and moved to market by machinery.

Very little that is fundamental to the curriculum has been done to accommodate the school and college system to the real meaning of the events which have occurred in this century. The chief school changes are largely physical. Farmers' children receive an education mechanized into the centers of consolidated school districts. Urban areas have become increasingly industrialized in mass production terms. Towns of moderate size in the supposedly agrarian Middle West serve mass production in two ways: They are county seats or shopping centers for the mass-production farmer; at the same time they provide labor for branches of great industrial enterprises which have often absorbed some local manufacturer. The centers of concentration of economic power are far away. Northern Illinois, Northern Indiana and Southern Wisconsin, for example, are each parts of different *political* states, but *industrially* the governing forces are in Greater Chicago, while in terms of ultimate *economic* control (finance) the capitol of this area is not even where the capital is.

Our concern is with the education which is given to children crowded unmercifully into city schools, and to the sons and daughters of the farmers hauled to and fro in crowded buses. This education continues to lag

in matters that count. Money is spent fairly generously on buildings, and the bonds are handsomely supported; the nationwide underpayment of teachers and the understaffing of schools are at last getting some attention; the devotion of teachers and parents has been admirable. But the end of this system is in sight. Teachers training colleges are 20% under-attended by prospective educators, though crowded with GIs seeking general education wherever they can get it.

Innumerable minor adjustments have been made to suit changing needs. Courses can be had in high-speed highway engineering, abstract painting, constitutional history, case law, accountancy. Nevertheless, in regard to the main and central purpose of education in a democracy, the tax-free, fee-free, universal, compulsory educational system of the industrial-agrarian age, supplemented by private schools, colleges and endowed universities, continues to fit students for a form of society that has passed away. It does not, and cannot, provide a clear conception of what constitutes the general welfare in contemporary society. How can the young citizen later express in electoral terms something he has not been taught and does not know?

The general welfare is a concept into which enters a variety of elements from art, philosophy, religion and science. Under an odious materialism, for example, welfare might be largely a matter of physical security and pleasures, ugliness could be overlooked, and virtue cynically depreciated. If, instead, the standard were a religious fanaticism, welfare might exclude even physical well-being from primary importance. Politically our government is expected to express the needs and purposes of the good life. A democratic government is, however, geared to reflect the wishes of the people. If the electorate is confused or uncertain as to basic values, no action is taken. It is the duty of the educator to do his part in equipping the student with the knowledge and insight necessary for a successful democratic society. When welfare was largely determined locally, a simple schooling could convert local experience into general terms. Now that the general welfare is determined and influenced by vast and often remote factors, a conceptual education is indispensable.

### A New Attack Upon the Problem

It is the purpose of this presentation not only to re-emphasize the need for a revised approach to the education of our citizens, but also to include a technique that is already available.

From 1940 to 1944, while the several conferences and colleges above referred to considered some phases of this problem, a small group of associates of MAIN CURRENTS IN MODERN THOUGHT pursued discussions and undertook work along fresh lines.

These lines made a break with the past, in a specific way. It was concluded that it would be more effective to assemble basic philosophical materials which the student should see, understand and mold conceptually himself. The reasons for this policy are several. First, the new materials for philosophy are numerous and revo-

lutionary in their effect, and arise from intellectual events of the greatest importance. Second, it will be a considerable time before professional philosophers come to any consensus of opinion (to say nothing of agreement) as to the meanings and proportions to be derived from these events, meanwhile leaving the students in conceptual darkness, and open to the risk that further new developments will again outmode the philosophers at any time. Third, a very certain result of some of the developments, such as Gestalt psychology, genetic studies, field physics, is that we now are sure that some appreciation of the whole has to be gained if any part is to be understood. The rising generation, it was held, can make its own common discourse across departments of knowledge, if it is put in possession of the data and laws and principles which stretch from end to end of educational subject-matter. What is required is a new natural history couched in terms of universals, and so presented as to break down the barriers of departmental learning.

To such ends, this group conducted itself as a small and experimental continuing secretariat. Could the recent gains in thought, from electronics in the 1890's to Relativity in the 1900's and quantum mechanics in the 1920's be shown to have a relation to the principles of art, the universals of philosophy, the truths of comparative religion?

The work was not only a sustained and step-by-step study of principles. It was guided by a thought which has doubtless occurred to others, but had hitherto not been tried out: Why should we not seek the educational solution for the social complex in the very sources from which arise those same social-industrial-economic changes?

The disproportionate effect of science and technology is a powerful cause of recent social change. We had, then, but to interrogate the new developments in science with a view to giving them, in the curriculum, a proper and proportional relation to art, philosophy and religion, and we would be looking into the social complex with new and perhaps adequate insight. We could then ask whether, and how, freedom could be strengthened in this country by an educational system using such a synthesis. We undertook to gather together the actual materials for a course in visual and verbal study which, though necessarily conceived at the university level, could be applied at high school age.

In 1944 we had opportunity to test portions of this material at Knox College. Although our study program was only partially developed, its useful effect upon reorganization there has been generously recognized by Dr. Carter Davidson, then President of Knox College (now of Union College). Since even in the initial stages the usefulness of our proposals could be perceived by socially active educators, it seemed evident to us that we had something of national value to offer. We concentrated as far as possible in 1945 and 1946 on perfecting the actual course of the study and the elucidation of the principles, while visiting various campuses and cities to keep informed of any related efforts.

The study in concepts, derived directly from instructional material, is now at a point of development where it can have a place, with proper adaptation to the curriculum into which it is to be fitted, in any college, university or secondary school system where the need to do such work is actively felt. A full description of what has been accomplished would necessarily be very lengthy, for the approach is novel and the scope immense. It is inevitable that in the period of time applied to this problem and with the participation of only a limited group of educators we can assert only a good beginning, but the doors to a definite technique have been found to be opening. What is required is acceptance of this challenge by an ever-growing group of institutions and the development of the technique under the test and disciplines of applied education. There is attached a brief outline designed to give an indication of the technique developed to date. Before consideration of this outline, certain further explanatory observations may be necessary.

Events in the last fifty years of scientific development have made most European philosophy from Aristotle to Einstein of primary importance as historical matter. To see this we have only to consider the fact that no one can today seriously propose to examine the activities of nature and of man conjoined in a rational universe in terms of space and time separately, but only in terms of space-time properties. As this metric conjunction was formerly unknown, in that degree European speculation was invalid and new beginnings are required.

The synthesis and wholeness so urgently required by higher educational agencies must resolve such fundamentals and hundreds of secondary developments—not all in science, of course. We have found that if we confront this complex, and use it in an atmosphere of respect for the insight of seers, sages, great religious figures, persons of acute intuitive and aesthetic perception, principles required for integration can be directly derived. Conceptual short-cuts from department to department of campus instruction are thus achieved in one course of study. The student is at the center, looking outward.

Further, he gains knowledge (and this is the core of the matter) of what is literally a sublime order authenticated by science. He acquires a notion of the universality of law, not merely as dependability of statistical description, but as an harmonic process and matrix for events. Even in science not enough is known of the extent to which this can be simply and immediately documented, hence the collection of instructional material and bibliography has been prepared in support.

It has been assumed throughout this work that education should heighten interest in learning, by showing the bearing it has upon a philosophy of life. It is held that ethical values can be strengthened if the total reinforcement of all aspects of the curriculum be brought into play. In this way the student's mental life will be geared to that of his emotions, restoring balance and integrity. In short, intellectual integration is seen as a step required in achieving an essential integrity, which includes adequate social and personal orientation.

To reduce labor, every variety of visual and other instructional aid has been called upon. Visual treatment makes the most difficult and far-off data immediately available, and shortens time while increasing vividness. We aim to take a load off the syllabus of general science as well as from specialized physics, chemistry and biology, and assist teachers of art, literature, social and other arts and sciences by framing the principles of their study significantly in the same conceptual structure as all other study. The student is thereby enabled to reveal or to discover for himself his true interests in specialization, particularly in institutions where adequate collateral personality, motivation, and ability tests are available. This central operation frees more time for the acquirement of skills.

A point of utmost importance has to be made. We are embarking on an American synthesis, contributing to a true American culture and way of life in a world milieu. In its fullness such an achievement is for the future, and since we are not suggesting that we shall do more than make a beginning, anyone participating in this work must not only assume a hopeful and inquiring attitude, but must also keep his analytic faculties at work. For he will himself have to make contributions to the general fund of data and proportions. This applies to the student as well as faculty participant. In short, we believe we have the means and materials to make an historical turning. If we have, then it is bound to demand both special and united effort. There is no such thing as calling in some supposed expert in this case. Americans have to get to work together on this task. We believe we can help to make out of that beginning a sound and clearly defined task, and that a method is at hand to enrich the mind in the manner and for the ends required. Of course there will be problems. Democratic process is the way of dealing with them as they appear.

A practical effect of such study is its ethical significance. Much of the declining moral force of American life is derived from religious and ethical family tradition. It descends from a time and a source in which the personal element was powerful. A concept of God as Person was central to a world in which the laborer personally disposed of his work hours, and the manufacturer personally owned his place of business, the father personally headed a household, charity was personal, and so on. Today we have impersonal and often absentee ownership of business, union disposal of labor, and many other impersonalizations in a new form of society. If the reality of God as Law, based on broad rational grounds, be afforded the student, the dwindling force of ethical judgments derived from older sources cannot but be re-enforced.

The course of study which presents this material will now be described in heavily compacted form. As said above, no adequate idea can be conveyed in words, for its chief feature is the employment of hundreds of visual items to give the student direct experience (as far as possible) of the exemplifications of the laws he is examining. It will be noted that every department of learning is laid under tribute for the material. The proposal is that every department shall in return benefit



from the existence of this course, and place upon it the conceptual load, strengthening these concepts by the usual detailed authoritative studies provided in courses of specialization.

The more important aspects of the study will presently appear in book form, and may be used for reference or text. This is heavily illustrated, yet is but introductory to the extensive bibliography, and the descriptions of the additional visual items. The work is constantly expanding. Motion pictures and other aids are included. The eventual development should be a four-year required course, in which the main emphasis is on *general* education, conceptually integrated by the student, during the first two years, and on *liberal* education, including social and political applications, similarly unified, in later years. The course is constructed to serve all departments as important preparation for art, philosophy, science and religion, as specialities, and for healthy domestic and community living in a global peaceful society.

## PART II

### Reservations

The following identification of the argument employs only one of the reasons for a shift of emphasis from the customary work in philosophy (study of logic, history of schools, categories, method, etc.) to other procedures. The latter in any case are practical choices, and are not advanced to supplant philosophy in general.

Even as to this one principle we must be brief. It is manifestly impossible to discuss usefully, in a few words and without illustrations, the larger significance of space-time, non-Euclidean geometries, homoloidal properties, quanta, etc. With adequate visual aids these can be made available and appreciable. Archibald Henderson, for example, has contrived for us an explication of the Special Theory of Relativity in one group of curves; but it would be merely befuddling to print it here, by itself, even if we had room for it. (It may be found in MAIN CURRENTS, November, 1942).

The new material, factual and philosophic, devised in accord with and by the help of the present procedure out of standard sources of knowledge, such as Shakespeare, is also omitted. The systematized bibliography has likewise to be entirely passed over, because parts of it would be merely misleading, but preliminary reading is later discussed. The visual documentation is here severely restricted to about ten items out of the thousand which are important to the documentation.

Such a reduction can scarcely be called a syllabus, and there may be some doubts as to its usefulness. Brief statements wrenched from the supporting context may sound dogmatic, outmoded, or positively erroneous, to readers without adequate equipment. Or, for those fitted to follow this brief argument, what we say here may seem to be appropriate for graduate study only. Despite all these handicaps, the following remarks may suggest to some readers the realism, the durability, and the

comprehensiveness for which we have striven in the full study. With these reservations, we now embark upon the single line of reasoning selected for present use.

### A Selected Principle

Throughout the history of classical and modern physics and the whole history of mathematics, it has been established practice to seek and to find constancy and order by shifting from the dimensional limitations of immediate description to another dimension, usually higher.

For example (Figure 1) the rectilinear sides of right triangles may bear an infinite number of proportionate relations to each other and to their hypotenuse, but the sum of their *squares* is invariably equal to the third square. Thus out of infinite variability is evoked absolute constancy, by appeal to a higher dimension. At the same time, it may be remarked, we are put in a position to perceive the conceptual significance of simple harmonic motion (A, B and C on the accompanying illustration) as a function of constancy, and thus both order and absolutes are brought under view.

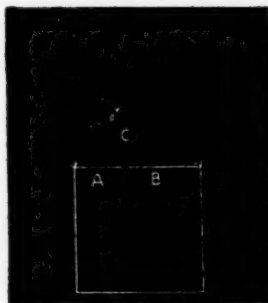


Figure 1

Such reasoning enables us to describe natural phenomena of great importance as well. For instance, Newton's gravitational law provides that all bodies attract each other with a force proportional to the product of their masses and inversely as the *square* of their distances apart; Kepler showed that the radius vector (a *line*) of a planet sweeps out equal areas (a *surface* or *two-dimensional* quantity) in equal times; and that the *cubes* of the mean distances of the planets from the sun are proportional to the *squares* of their times of revolution about the sun.

Even thus revealed in widely extended features of the universe, these instances, which run up to many hundreds, were formerly sometimes regarded as largely practical or descriptive operations. We cannot deal here appropriately with this attitude, which may have been not entirely unreasonable formerly. It involves concepts of the relation of the human mind to Nature's processes, and much else in the realm of psychology, philosophy, and related subject matter. In any case such a discussion is today less germane than formerly, because circumstances have arisen which challenge the interpretation referred to. Such developments as Relativity, quantum mechanics, genetics, Gestalt psychology, have elevated to cosmological and metaphysical place this fundamental practice of seeking constancy and order, both static and harmonic.

This was effected in one stroke: By introducing a

four-dimensional space-time concept Minkowski has transformed these scattered instances into evidences of a new universal (ideal) to run alongside another universal, motion (both ideal and real), and the physical correlate of motion, matter and energy (real). If we care to give a confining name to the result, it may be called transcendental realism.

This is a decisive event. Yet the kind of space-time (Riemannian) so far explored with some success in these subjects has proved inadequate to bring together the major presumptions even of physics, as we see from the fact that no field theory is yet available for gravity and electromagnetism.

For our purposes that kind of space-time is even less adequate, but the principle is a major premise for us. It may be stated: Order and constancy undetected at a certain dimensional level may be located in another, usually higher, dimension.

These developments do more than sweep together and elevate to a very high place of pre-eminence in a higher-space domain a vast array of harmonic and symmetrical phenomena in science. They make possible unitary treatment of art with science, and (when extended appropriately and by sound method) they make it possible to incorporate what counts most in religion and philosophy into this whole. Simple harmonic motion, form and proportion in art, the place of law as order in society, and the like, get a new and more intense importance, and display new bearings on the nature of man, his relation to the universe, and the true and proper form of society. For in current space-time-Nature studies we have no weak "argument from design." The pragmatic force of these developments is a significant and conspicuous feature in most cases, and this pragmatic sanction provides the power which compels us to make a beginning with new ideas and attitudes.

Without being bound down to the geometric restrictions of contemporary physics, we ask in the studies here being described: What will transpire if we accept the existence of Euclidean and non-Euclidean, real and quasi-real space-time, and even space-times, and then examine all forms in physics-chemistry, biology, psychology, and sociology, and all cycles in astronomy, atomicity, geology, history, biology, and other subjects, in terms of the properties of such opulent space-times? Some of these properties are described in available standard works, and H. M. S. Coxeter has announced the early publication of a definitive work upon some of them at the four-dimensional level, where they are of highest significance for our immediate purposes. We think here, however, of much more, and recall a remark of A. N. Whitehead to a mutual friend to the effect that he expects a time to come when every mathematical notion man has had will be found exemplified in Nature.

The procedure amounts to evolving a new natural history and even natural theology, derived from all subject matter, ancient and modern, Eastern and Western, subjective and objective. It includes not merely small parts, but the whole of kinetics and statics, and all

that is known of dynamics. It also faces up to biological data, and to the special significance of creative man. The results are rich beyond all hope of brief description, as we have said, but the following specimens from the course of reasoning may have meaning here.

## The Course of the Argument

Looking at the whole of natural and human activity in the light of the foregoing and of many other considerations, and considering the phenomenal universe to be a going concern under whose external processes is another, deeper, and essentially harmonious noumenon, all existences can be reinterpreted and re-evaluated in terms both dynamic and evolutionary, as well as terms static. We refer here only to the latter because they are easier to elucidate, but we may first make some general observations about the framework common to all aspects of the immediate terrestrial cosmos.

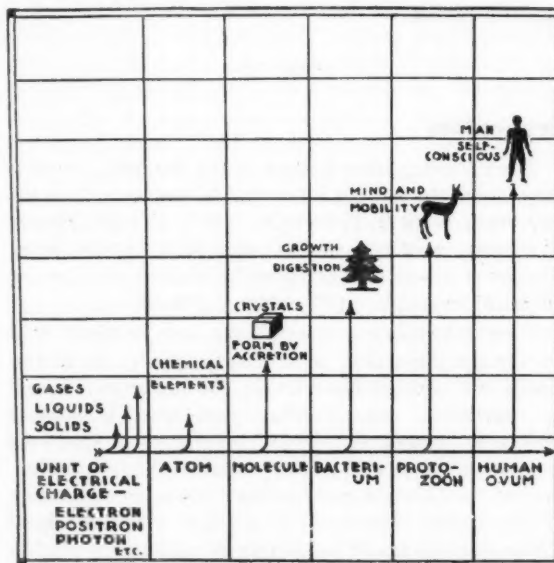


Figure 2

Conceived in present terms, the hierarchy of living and non-living forms may be laid out as in the accompanying scheme, Figure 2. In this, provision is made for all the inter-gradations between kingdoms, though of course not shown here, and also for the striking dissimilarities at the crest of each major evolutionary advance. At the bottom stretches horizontally from left to right the microscopic world, a series of unitary entities and unicellular lives, with increase of sentience (intension) left to right, on the horizontal. If we conceive the vertical co-ordinate to represent increasing organization properly and invariably associated with lapse of time (evolution of organic and colonial living), we thereby associate morphological gains made with the lapse of time (extension) with increased sentience (intension), and thus we get a general view of the whole of nature, starting at the lower left with those atoms, zeros, and privations at the root of material structures, and pass over and upward, to that *tertium quid* so evi-



dent in human activity, creative and spiritual resource. Thus energy, life, and consciousness are put before the student in a single paradigm, useful for later expansion and hence good for a long course of thought.

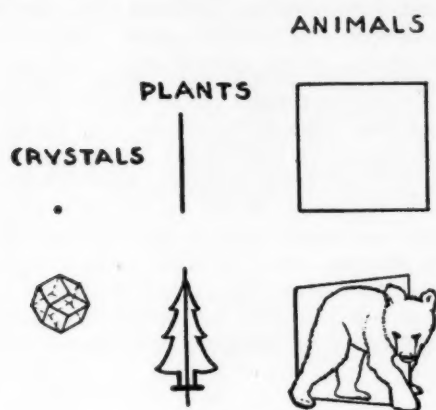


Figure 3

Associated with this way of arranging the hierarchy of creatures is a singular geometrical fact displayed in Figure 3. On the whole, the crystal kingdom tends to be centro-symmetrical, the plant kingdom linear in symmetries, the animal and especially higher animal forms,

bilaterally symmetrical. The arresting fact that man is *not* bilaterally symmetrical can, in these terms, be given deep-reaching meaning. We do not interpolate this difficult subject here. (See MAIN CURRENTS, July, 1943), but we may note closely that the planar centro-symmetries of crystals can be represented by one

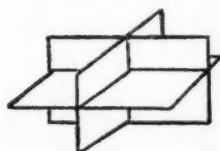


Figure 4

interception of three space-planes, Figure 4.

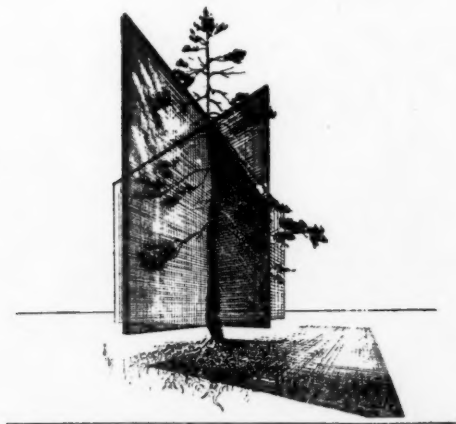


Figure 5

A major difference between the crystal kingdom and that of the plants is that the latter forms *grow* whereas the former merely *accrete*. And as a result of growth, or consonant with growth, is the abandonment of centro-symmetries in plants and the featuring of linear symmetries. It will be seen from the tree in Figure 5 that two space-planes provide the axis required, but we must imagine a third time-lamination (impossible to represent, of course) to allow for the features of the growth.

Similarly, when we pass to animals, and especially the most significant of animals in higher ranks, symmetry of form is over a plane, and this change is accompanied by a change in the time-relation. For these higher animals grow (which implies one time lamination) and they also engage in purposeful mobility. This is another kind of motion, additional to growth. So a second time-lamination must be imagined. We show in Figure 6, the head of a Saint Bernard dog. See also the bear in Figure 3.

It should now be clear that space-time geometry has as much meaning for morphology and for function in biology as it has for properties and energy levels in physics and chemistry. This subject we document in all its ramifications.

We believe we have, by these means, educed a technique with which to make a start in the study of the properties of time, through examining growth, purposeful mobility, and duration (memory and anticipation in man) and much more, as time-variants displayed primarily in plants, animals and mankind.

Continuing on the main line of reasoning, we are attracted by a fully-established body of knowledge. The crystal kingdom forms a domain which lies on the border with physics-chemistry on one side and biology on the other. As today understood, the crystal state is much more comprehensive than most general readers know, and its significance to life is now very great indeed. In fact, the living cell is today often regarded as an aperiodic crystal. For our purposes we note that in this vast block of natural geometric forms of true



Figure 6

crystals an almost unbelievable reduction of systems is possible. There are between 30,000 and 40,000 crystal forms known to mineralogy; and millions of additional forms can be artificially prepared, for every specific chemical substance which crystallizes does so only in a form peculiar to itself. Yet these thousands and millions are reducible by steps to classes, each containing more species, first 230, then 32, then seven, those to three, and finally to one singular convex polyhedron, the tetrahedron. In order to display the magnificence of this order, we supply a few items, expanding the series out from the tetrahedron to the cube and octahedron, and so to a few of the more easily appreciated differentiations, Figures 7, 8, and 9.

We thus arrive at the following proposition, novel to minds so long accustomed to statistical studies, averages of random events, and the like, and so little used to what is now emerging from science: We observe that the space-time potential, which is here our main theme, provides other regular convex polyhedra, polygons, and related polytopes, additional to the cube and octahedron and the tetrahedron. The total resources of the geometry of space-time in question (and here used) have not yet been determined by methods of mathematical exhaustion, but on the positive side it is established that we have a group of figures connected with the dodecahedron and icosahedron, which are mutually reciprocal, as are the cube and octahedron. There is a third group, which has to be examined in its four-dimensional (polytope) aspect if we are to see the full plenitude of its regularity. (This can be done in the classroom by using quite simple three-dimensional models). And finally, additional to those three groups, there are all the splendors and harmonies of circular, spherical, and hyperspherical figures. Upon this basis of four groups (geometrical matrices) we may state a theorem of great importance which has been documented as fully as may be with present resources: *These four groups may be applied to the forms and classification of the crystal, plant, animal, and human kingdoms, and hence energy, life, and consciousness.* Thus for contemporary thought is suggested a way of running the lines of the harmonic order throughout all nature, into human affairs, as a universal, to which we give the name *general morphology*.

It is obviously impossible to discuss more of this prodigious generalization on this occasion, or show where and how mind and soul come in. We can only say that in static terms the documentation is sufficiently striking and simple to be looked at and measurably understood by any observer with a good high school education, under proper conditions, and by seniors in high school under special conditions. Nor can we pause to show how sages and seers, poets and prophets have experienced the order we propose shall be studied. But we must remark that these pioneers speak about this with one voice. If we in the Judaic-Christian-Islamic tradition say that the heavens of ideal beauty declare the glory of God and the firmament of matter sheweth his handiwork in periodic tables, in the Bode-Miller and

other Laws, no less do we find that the Hindu-Buddhist-Taoist world has long since maintained that there is a matrix not primarily luminiferous but sonorous and harmonic, precisely described as the Akasha of the Nyaya-Vaishesika. It is indeed no other than the "aesthetic continuum," as Northrop so admirable denominates it in *The Meeting of the East and West*.

The studies lead directly from individual forms and taxonomy and classification (on which they have powerful specialized bearing) to ecology and biomes, and hence, at the human level, to the form proper and inevitable in a free, mass-production, organic society, an orderly American way of life. In that transition, from nature to man, appear some of the most obdurate and slippery problems connected with getting a consensus of opinion about what really is the full range of human nature, such as conscious and unconscious, body and mind, soul and spirit, selfishness and altruism. But they

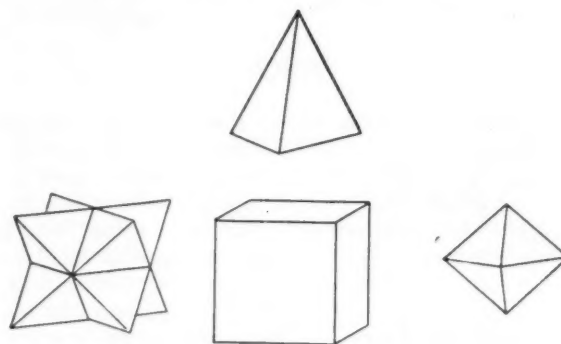


Figure 7

Above, the regular convex tetrahedron. Left, two of the these rectangularly intercepted. By connecting the vertices, the cube is derived. By snubbing off the points, the octahedron is derived. Thus any forms derived from cube and octahedron eventually refer back to the tetrahedron.

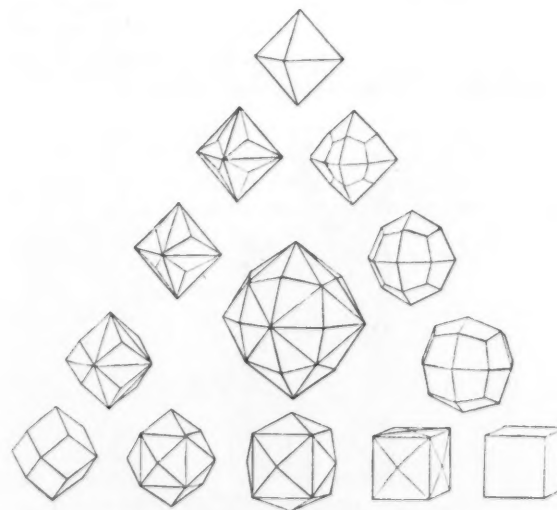


Figure 8

The octahedron, at top, and the cube, at lower right, give rise to the limiting forms of the isometric holohedra. The observer needs no mathematics to follow this transformation. (From *Elements of Crystallography*, G. H. Williams, Holt, N. Y., 1892).

appear in a new light, and certainly for education it is high time we arrived at a working agreement as to the nature of man. That agreement is not impossible in a framework of a grand systematics which rests upon an adequate and valued general morphology. History, archaeology, anthropology; geography, geology, astronomy; geometry, algebra, and their intermediates; logic, symbolics, harmonics; physics, biology, psychology—no topic is too large or too specialized to escape simple or extended reference or to be laid under tribute for conceptual gains, to the end that the student shall see not only life, but energy and consciousness, whole and harmonious, and discover for himself his place in the scheme of things.

It is important not to conclude without reference to the social studies natural to the pursuits proposed.

Many sociologists have seen the need for some method of arriving at general agreement as to the actual operative form of society, especially modern society, so that functions may be clearly defined, and the place of individuals and institutions be equally certainly determined.

In this matter two lacunae have long been apparent. One of them may be referred to in the words of R.R. Marett, Rector of Exeter College, Oxford University: "... society . . . will inevitably have a structure, just as if it were really and not metaphorically a body; . . . there will be functions corresponding to the structure

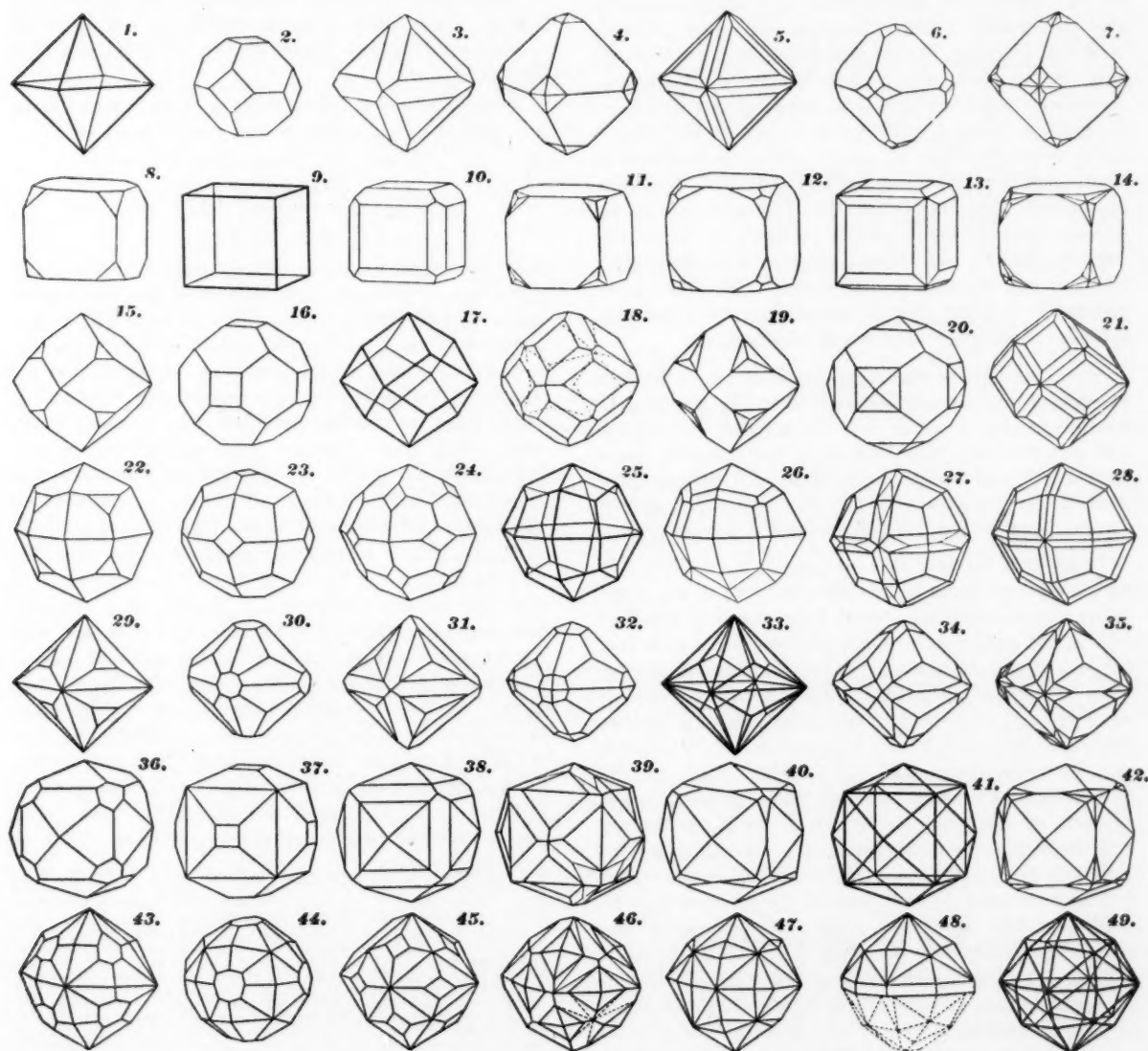


FIGURE 9

The polyhedra in the preceding Figure (8) will now be found distributed down the diagonal of the above group, and out from them are specialized (by snubbing, etc.) further isometric combinations. These three figures 7, 8, and 9, constitute a display of some of the simpler crystal geometries. (The student should note that the perfectly regular convex dodecahedron does not occur in the crystal kingdom). All forms are referred back to the regular convex tetrahedron by way of cube and octahedron, in terms of the four-dimensional polytopes of these forms, not their simple three-dimensional (polyhedral) variety. Because of this four-dimensional latitude, the variety of forms derivable from so simple a beginning is bewildering, and the resemblance to the tetrahedron may be completely lost to view. (The above plate from Ulrich's *Krystallographische Figuratafeln*, Hannover, 1884, reproduced in Williams *op. cit.*)



... In terms of such a morphology and physiology of the body politic, we could stop short at describing all the outward manifestations of ... social life.\* Thus he defines one of the known and unsatisfied needs of the sociologist. Lundberg's work points to this gap in knowledge, and one of his pupils has made an effort to fill it.\*\*

To describe the other need we pick up and extend our quotation from Dr. Marett. Continuing after his remarks about social morphology, he says: "... describing all the outward manifestations of ... social life ... would be as if one were to visit a foreign country without knowing a word of the language, and were nevertheless to draw up a description of the visible behaviour of the people. Yet clearly such an account would be very imperfect. Another traveller, who was at home with the language, would double or rather treble its value by supplying the motive—the more or less conscious why and wherefore—of everything that was done. In short, a Social Psychology is needed to supplement the mere surface view of life of any given people. For Man is not only the social animal but the self-determining animal above all others. The ultimate clues to his actions must be sought within himself, whatever the behaviourist may say. Indeed, a behaviourist philosophy which would explain life exclusively in terms of matter and motion is either physical science gone mad, or, more probably, it is sheer narrowness of education."

Here, then, is the challenge: Sociology must be both morphologically correct and explicit and in some degree mensural, and it must be functionally meaningful. For our purposes that form and that meaning must have exact and adequate reference to contemporary America in a neighborhood world, and must serve a future American culture in a peaceful global society.

From what we have said up to now, it should be apparent that any social studies done in terms of the properties of space-time are bound to be not only morphological, but even metric. Such precisely is the outcome, the vectors and the tensors, the forms and the functions, of a freemen's, mass-production, organic society, in axiomatic and geometric form. In that form an obvious relation is confirmed between education and philosophy, and between government and religion taken as the brotherhood of man and the fatherhood of God. But a new and no less inevitable kinship is found between art and production, and between science and distribution. This puts us in a position to define, at last, social equity in a modern society, and to pass on the practical steps to implement both equity and ethics. This is possible because the organic form of society has a place for body and mind, no less a place for soul and spirit, defined as adequately as any other factor or tissue. The economics of such a structural society are quite naturally indicated. Already determined by trial and error conjoined with intuition, some of the required principles for the economy have been called into use in American indus-

try.\* To encourage their extension, and their use for the general welfare, is no mean part of the program in sociology we hope to assist in formulating.

To do this, as Dr. Marett makes clear, motive, soul, must be recognized. This is the inviolate core of being, and the level at which the diversity of primal entities in the universe appear to the individual as unified. In all religions, at many levels, in many degrees of clarity and depth, the idea is repeated that a trinity of universals are the *personae* of a unified, sublimely ordered, cosmos. By pursuing this theme from its simplest appearance in the physical world as "the beauties of earth", up to the aetherial heights to which we propose the student shall look, working always realistically in contemporary terms of space-time-nature, it is possible to perceive how the social body is informed by the intelligible soul. In such a society the citizen inheres dually, being himself both body and spirit.

Isaac Watts long ago celebrated in his *Divine Songs* the then simpler problem of the man of good will:

Whene'er I take my walk about,  
How many poor I see!  
What shall I render to my God  
For all his gifts to me?

That same problem faced men of good will in another great age of confusion and transition, and the answer again is that duty is dual: "Render unto Caesar the things that are Caesar's, and unto God the things that are God's." Today's confusion as to the things that are society's (democracy having supplanted Caesar), is surely likely to continue until we come to know effectively the relations between equity and ethics, and this knowledge can hardly come to us until we ascend at least theoretically the mount of vision, by means of an education capable of directing our sight from an altitude.

Receding still further backward into the ages, we find the charter for the work some of us would like to see done for our time and our people: "He who has been instructed thus far in the things of love, and who has learned to see the beautiful in due order of succession, when he comes toward the end will suddenly perceive a nature of wondrous beauty (and this, Socrates, is the cause of all our former toils)—a nature which in the first place is everlasting, not growing and decaying, or waxing and waning; secondly, not fair in one point of view or at one place fair, at another time or in another relation or in another place foul, as if fair to

\*Since writing the above we come upon the following passage, including the footnotes, in *The Social Problems of an Industrial Civilization*, by Elton Mayo, Professor of Industrial Research, Graduate School of Business Administration, Harvard, 1946, page 34:

"For nearly two centuries economic study has been supposed to provide the social skills requisite for the effective handling of civilized human activities. And in some areas its more concrete studies have unquestionably fulfilled this demand. For example, questions of cost accounting, marketing, and the large-scale organization of industry in its formal aspect have been handled with considerable and growing skill. But in these affairs there has developed economic practice of a valuable kind far removed from classic economic theory. E. H. Carr has said that in recent years the 'chronic divorce' between economic theory and practice has become more marked than ever.<sup>1</sup> And he pictures economic theory 'limping bewildered and protesting' in the train of economic practice. Chester Barnard, himself an executive of great experience, finds that effective leadership in industry, that is, successful administration, 'has to be based on intuitions that are correct, notwithstanding doctrines that deny their correctness.'<sup>2</sup>"

<sup>1</sup>Edward Hallett Carr, *Conditions of Peace* (New York, The Macmillan Company, 1942), p. 79. <sup>2</sup>Chester I. Barnard, *The Functions of the Executive*, Preface, p. xi.

\*We quote from his words in *An Introduction to Social Anthropology*, Grosset and Dunlap, New York, 1931.

\*\**Dimensions of Society*, Stuart Dodd, Macmillan, 1944.

some and foul to others, or in the likeness of a face or hands or any other part of the bodily frame, or in any form of speech or knowledge, or existing in any other being, as for example, in an animal, or in heaven, or in earth, or in any other place; but beauty absolute, separate, simple, and everlasting, which without diminution and without increase, or any change, is imparted to the ever-growing and perishing beauties of all other things. He who from these ascending under the influence of true love, begins to perceive that beauty, is not far from the end. And the true order of going, or being led by another, to the things of love, is to begin from the beauties of earth and mount up for the sake of

that other beauty, using these as steps only . . . . . But what if men had eyes to see the true beauty—the divine beauty, I mean, pure and clear and unalloyed, not clogged with the pollutions of mortality and all the colours and vanities of human life—thither looking, and holding converse with the true beauty simple and divine? Remember how in that communion only, beholding beauty with the eye of the mind, he will be enabled to bring forth, not images of beauty, but realities (for he has hold not of an image but of reality), and bringing forth and nourishing true virtue to become the friend of God and be immortal, if mortal man may. Would that be an ignoble life?"

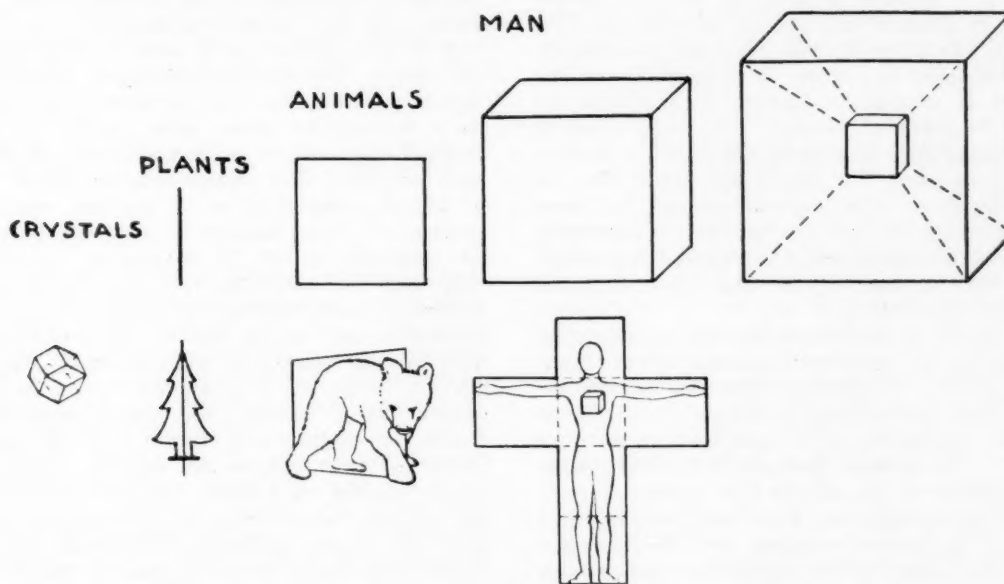


Figure 10

The above symmetry series is merely Figure 3 extended, and is not to be taken as fanciful symbolism, though it has conceptual bearing on art, philosophy, religion, and science. We are interested in realism and not in what Jung well calls the mysticism of numbers. It is in Nature that we observe the series point, line, plane as centrosymmetry, linear symmetry, and bilateral symmetry. We observe that the series is interrupted here, for the human face and form are bilaterally asymmetrical. The logic of the sequence is that human growth has reference not to a plane, but unsymmetrically to a regular solid or regular hyper-solid. If we employ the analogue of the square, then that solid is a cube. In point of fact, human bodily proportions can be shown to draw upon a great variety of polyhedral frames. If so, then appropriate postures should reveal appropriate proportions, and indeed the human reach is the same as the height, on the average, when disposed in the flat. We merely summarize this and a host of data on human morphology by a single human figure, placed in an unfolded cube. The final object, on the right, is a correct model of a hypercube, which has been given the name tesseract. The properties of a tesseract would be revealed as a growth series in nature. Discussion of this ranges far beyond our present purposes.

### PART III

## THE TASK IS URGENT

Asserting our faith in democracy, we have made mention of its deep-seated problems, and recognized the vital role of education in restoring health to society. We have seen that the United States confirmed democracy by establishing tax-supported free education; that the curriculum has not been adapted to the mass-production age; that this failure and the precise cure are widely recognized; that nothing effective has been done formal-

## A Summary and Conclusion

ly to bring about change at the center; that friends of MAIN CURRENTS have for some time been at work on several aspects of the required solution with some initial success.

The work of this group consists of the collection of data which builds up integration at the conceptual level; the collation of principles of the arts, the universals of philosophy, the values of comparative religion, and the

laws of Nature as documented by science; publication of significant matter, fragmentarily in *MAIN CURRENTS*, collectively in works to appear; doing the sustained and purposeful reading of basic and current matter which is required.

The educational applications assume that these principles, universals, values, and laws have to be engaged in a rational grip, even if detected first by intuition, if the concepts are to have value in the curriculum. In educating young people so that they will defend the general welfare in a democracy, reason must come competently into play. The final object of integrating subject matter is the evocation of integrity, detachment, calm, and insight, as necessary elements for honor, probity, truth. We therefore emphasize the new role of truth in science.

Until quite recently speaking of "a truth" in the sense of an absolute was offensive in some scientific circles. It would signify that there are principles at work which must be assented to although no one has ever seen an instance in Nature. In this sense we speak of the truths of religion. One might speak of himself as immortal. Obviously this would be hard to document, as more than one person would have to be about for quite a while to get the evidence. We know we change daily, bodily. Yet the sense of continuity we associate with ourselves is a universal experience. Ethics inheres in something or other which acts as if it were a permanency.

Today truth, in that sense, formerly so repugnant to science, has been restored to general esteem. A remarkable feature of Einstein's work was splitting off the ideal from the material in Newton's laws (*MAIN CURRENTS*, July, 1946, p. 70, column two), when he raised the basic question about belief in ideal motion of a material body in a straight line, forever. No one has ever seen a straight line, nor a body in straight line motion, and the idea of continuing on to infinity means forever. The upshot of this inquiry into absolutes has been to substitute geodesics for straight lines, but to re-establish the role of the ideal in physics even more firmly. Relativity documents the necessity for a metric structure which no one sees, except possibly in crystals after a fashion, but which is obeyed by Nature. In consequence, truth, in the sense we have been discussing it, has a standing it has not had in science for many generations. A person of sixty believes it to be true that he is the same person as he was when his body was a bright-eyed child. The physicist believes that metrical lattices betraying harmonic properties in their material expression, operate under the veil of earthly things. If, out of this remarkable rapprochement between science and religion we can derive some really good ethics and aesthetics by way of philosophical insight, something which belongs to spiritual splendor will come back to us: self-reliance.

For the loss of self-reliance is caused by much more than the concentration of economic power in a realm which is outside of the political reach of democracies. And the solution of this problem must involve more than political action. In fact it may be reasonably doubted that *political economy* is the ultimate solution. Even those who take to political action to mend economic

ills doubt the virtue of such escapes. For two or three generations we have had the astonishing spectacle of government making increasingly stern and consistently more vain efforts to do what it can in the economic domain. During this time unelected economic concentrates of power have resisted when they were not themselves going to government for legislation, subsidies, and protection. Along these lines our plight steadily worsens, and the individual who cares to be self-reliant finds more and more that his economic welfare is not in his hands. That a few may inherit financial security or power, or a few achieve it, is no answer for the many. The main social question is untouched: Is there any alternative to the constant oscillation between the pressure of society on government to protect the citizen, and the pressure of business, industry, and especially finance demanding that government's response be as small as possible?

A more active and higher ethical standard is part of the answer. Ethical drive and power come from religious faith, but this cannot be provided in channelled form through the public school system. It may be doubted whether it can be communicated at all by verbal assertion alone, since genuine religious faith is a mode of life, not a set of terms. In any case, the immense prestige of science requires us to attend to its claims on mankind's respect. It is essential, we hold, that there shall be restoration of respect for truth independent of local circumstances, if personal responsibility is to come back to the citizen. The citizen of today will come to value truth when he knows that it lies beneath the surface of things, that he is rooted in this deeper state of affairs. From science, properly interpreted, the student may discover that he can know truth, and from religion that only by knowing truth can he confirm his freedom. When it is conceded in our country that we believe in a universe of law, then only will dodging, half-truths, double-talk, trick statements, indirectness, self-abasement for physical gain, smearing, and the whole evil genera of falsehoods be understood for what they are: sickness of the soul taken from that miasma which poisons love while it clouds the spirit. That miasma is man's ignorance of his glory. If this be doubted we suggest a preliminary re-reading of that profound and today topical passage in *John* (viii, 31) wherein occurs the statement: "... the truth shall make you free", and of Shankaracharya's opening words in his *Atmanatma Viveka* (Discrimination of Spirit and Not-Spirit), which is identical with the first proclamation of Siddhartha Gautama Buddha in the *Dhammachakkapavattana Sutta* (The Setting in Motion of the Chariot Wheel of Righteousness): "Nothing is spirit which can be an object of consciousness. To one possessed of right discrimination, the spirit is the subject of knowledge."

A notable phenomenon of recent years in this country has been the growing concern of university and college presidents, professors, writers, artists, and radio program personnel with the national and international scene. There has recently appeared a simple account by Elizabeth Hawes of her experiences in the labor movement, *Hurry Up, Please! It's Time*. (Reynal & Hitchcock, New York, \$2.50). This might not be con-



sidered a serious book, but it is a serious portent coming as it does from someone with the author's background. Its content and atmosphere are most revealing as to what happens when a woman, sensitive and sincere, finally awakens to the shabbier and more violent parts of our American scene. Miss Hawes does not write hysterically, but she does communicate shock. There is no occasion for hysteria; but certainly it is time to work at the very root of our problems.

There is a very special reason, broad, historical, and sobering, for urgency. The coming of much greater leisure to all mankind is sure, here and now, or somewhere and presently. That event will progressively make mere literacy inadequate, as it has now already become a cause for ethical and economic decay. As the educated citizen grows in conceptual wealth, the coming of physical wealth, security, and leisure will be proceeding. When the latter is more fully achieved physically, the former will be at hand for spiritual strengthening. The present break-down of families,

increase of mental instability, confusion, bleakness and despair, which serve the evil purposes of personal and racial violence, can thus be arrested at the root, in the individual who today is likely to seek unworthy relief from his emptiness and boredom. The pursuit of truth once more established as the central purpose of education, leads naturally to a love of beauty, and to enjoyment of the good.

The achievement of leisure is the meaning of mass-production. The achievement of insight with which to use the leisure wisely is the meaning and purpose of an education devised in terms of concepts. Thus enriched and fortified, the general welfare is secure, because what constitutes welfare is known. We aim to show that this knowledge can be found and communicated. Is such a purpose ignoble? Does it deserve sympathetic attention? Is it high on the list of causes requiring immediate aid? Answers to these questions are the concern of persons in posts of responsibility.

F. L. Kunz

## READING TOWARD CONCEPTS

### The Two Materialisms

Throughout this study a distinction is maintained between two materialisms. The belief that anything which is experienced as if it were objective to consciousness, must be materially invested, is a generalization which has served physical science well, without closing off the possibility of existence to unknown energy levels. This universal includes even now one variety of effect upon the known physical world not traceable to material origins: cosmic rays. It is evident that a materialism so generous is necessary. Today we know that matter is but specialized forms of a field of energy which stretches far beyond the solid, liquid, and gaseous states, through many levels, to geometric points, anticipated in the Hindu doctrine of atoms (Sanskrit, *anu*), which constitute the veil (*Maya*) over the transcendent reality (*Brahman*).

This thinning away of the substantial to the insubstantial was perceived early in the revolution in physics. Einstein and de Sitter discussed aspects of it. Eddington attempted to abandon lines of finite length and to reduce the world to true atoms, mere points. P. A. M. Dirac has contributed to progress in this field, and as late as December 19th 1946, a further step was marked by the Mayer Award going to a research worker who studied with Dirac at Christ's College, Cambridge, Dr. Jayaratnam Eliezer, of Ceylon, for a discussion of point-particles in quantum theory. All this inquiry is on the border between the infinitely great and the infinitely small, the "greater than the great and smaller than the small" of the Upanishads and of Vedanta. It is a genuinely philosophical treatment of matter as gradations of unknown extent.

To the other notion, which also goes by the name materialism, should be applied a different term, perhaps physicalism. It lingers on among us from an out-moded

## A Reasoned Bibliography

last-century science, when it would have been ridiculous to entertain the notion that a point-atom of infinite energy potential is serious physics. An educational lag has kept it alive, and large sections of our literate population oriented to popular science continues in the assumption that physical experience is the only reality, mind is but a by-product, and spirit a mere belief. Even in such circles it is coming home as truth that the universe has its real source hidden and that the physical is an end-product, in every sense, including that of astro-physics.

But there is much yet to be done. For in the mind of some who have had a so-called higher education, "an odious materialism" (in Einstein's recent phrasing) can exist close beside a fervent, sometimes intolerant, religiosity; while a narrowing-down of the generous materialism which we described above, to a mere sensationalism, may be the practical philosophy of strictly scientific minds motivated by high social and ethical purposes. The statement may be safely made that these double orientations in individuals arise from failures in the philosophy of religion. The complementary truth to a spacious and workable materialism is taught as basic doctrine in the most fundamental literature of Buddhism, Christianity, and Hinduism, as noted precisely on pages 23 & 24 of this issue of *MAIN CURRENTS*. The religions all maintain that spirit is the subject of all objects, and is quite as important for contemplation and experience as is matter; and that the truth which is required to free us, and hence to confirm freedom in society, is that body of knowledge which is as true of subject as it is of object, of spirit as of matter. Latter day devotees of religion have a good deal lost sight of this fundamental requirement, and physicalism is the poor substitute.

The remedy for this state of affairs is a recognition that there is a rational means available to bracket subject

with object, religion to science, spirit to matter. The first step is to accept the sweeping generalization under discussion here, we believe. That is to say, if we are to make the needed conceptual gains, we must realize that the word materialism is very much larger than the term physical, that energy is far larger than material, that a monism of spirit and matter is today possible, and (for our immediate purposes) that the comprehension of an adequate materialism is but the first step out of physicalism.

The second shift of ground, from three to four, if not more, dimensions, is even more difficult than a final achievement of the energy-from-points concept, yet no less necessary, if we are to encompass all experience in one set of rational terms. The obstacles are two: habit, and mathematics. Each singly, and especially the latter, would be easy enough to deal with. Combined, they are formidable educational obstacles. During the centuries when no rational procedure was generally available, man has made his transition out of the physical by non-rational progression, through phantasy, belief, aesthetic expression and the like. It is today physical data which require us to use a four-dimensional realm as no less real than three, and the implications of a hyperphysical reality are hence acquirable by rational steps.

We are therefore now required to do by reason what we have long sought to do mainly by unreason. But the reasoning itself has been difficult to many because, up to now, it has been limited to highly technical mathematical skills. Restatement in verbal terms is progressing as new books appear, but the mathematical reasoning will always be a component, even when the *hieroglyphics* have been translated to verbalisms. Mathematical reasoning is a peculiar technique, quite mistakenly reduced to logic. *Proof* in mathematics is strict, but *progression* is by intuition (by which we do not mean simple assumption), and what we educators want now is progress. We shall make further reference, later in this reading guidance, to the relation of logical proof to intuitive progress, and here merely say that a mind habituated to physicality divorced from a heart which has sought freedom by unreasonable means, is our real problem, not the mathematics.

If we are to succeed, we must summon not logic alone, but all the resources of intelligence, which can order and use the drives of intuition without retrogression to pathetic beliefs. The only steps appropriate to education are ultimately rational, each clearly understood. We have to take this step from three to four dimensions, from physical to hyperphysical, by means formulated by physics, in itself as of today no task for toddlers. But let us not make it needlessly difficult with extraneous elements, but consider only imperatives.

First, there is no escape from our duty to go ahead, it being forced upon us by physics itself.

Second, let us have no encysting of habitual beliefs away from the freshening circulatory system of learning, for fear they may prove to be erroneous. Whatever is true in mankind's achievements through aesthetic, philosophical, or religious means is not endangered. Truth is never menaced but only supported by more truth.

Third, to the opposite party: surely we would be foolish to resist all the implications of the new freedom because its gains have hitherto been anticipated by non-rational or illiterate process? Man has breathed all through history, though his theories of the process have been poor. His theories of spirit may be ridiculous, but he may be engaging in exchanges with the cosmos at that level, all the same. Columbus was correct in believing the world to be round. Today the people who do not accept the reality of the hyper-sphere are flat-earthers. The sally which has lately been successfully made by the theorists into the hyper-sphere proves them right about the new and larger roundness of things, but it does not prove the flat-earthers wrong about the existence of India. They may merely have India wrongly located, next door. Beyond the tumultuous Atlantic of nineteenth century randomness Einstein has discovered a bare continent, inhabited sparsely by those simple, stoic savages, hitherto unknown facts. Beyond this wilderness there may be yet another and more pacific ocean, and then continents populated by civilized souls. Thus these well-reasoned voyages to the West may, if pushed home, bring us round to the places reported rudely from earlier journeys to the East. Man is in touch with Nature in manifold ways, not narrowly by logic alone, however good that pedestrian infantryman is in consolidating gains.

### Practical Aspects

We are herein re-organizing reading in reference to mind at work in four dimensions, yet not regarding that generous enlargement as the end of the resources of Nature or of human high-level psychology. Further, we propose to show from the sources that no proper knowledge of these higher domains can be gained by presuming them to be less charged with life and worth and meaning than the physical. We propose not only to study the physical shadows on the walls of Plato's cave, but to turn round and see the Forms which cast them, and study the source of the light, as a preliminary to casting off chains and exploring the free worlds about us and behind us. Reason is to be our guide, not our gaoler.

Much of the source material for this long-range program in reading is technically difficult and mathematically advanced. In our case the common good cannot be served by popularization, for the kind of simplification we look for in the future is not to be achieved by a levelling of the hills to a plain, but by an ascent to the heights. We therefore list here, first, works of prime authority, choosing where available those relatively full in verbal exposition and bristling as little with mathematics as possible. Second, we offer some guidance here and now as to how to interpret the contents of books recommended, in the larger context. Third, we intend to discuss these topics conceptually in MAIN CURRENTS, from time to time and in book form, and we invite such discussion. Fourth, we add references to popularizations by experts in each group of topics.

The expert, particularly in physics, writes in a very special atmosphere, conditioned in two ways: He may be describing end-results—that is, physical phenomena

—which are hyper-physical and not physical in origin, and hence charged with important meaning for conduct. Yet his work involves a transfer through terms which reduce the superphysical reality to fleshless mathematical skeletons. For cosmology this may be all very well, but for earthly efforts toward the good life it lacks something. It is difficult to feel warmed and encouraged by an embrace of bones even in nice mathematical arrangement. Second, until quite recently the expert wrote of new gains in terms of reference physically confined, and from these terms the general reader was likely to mislead himself. Our deliverance is therefore to be sought in the source-data, not in popularizations, unless they be accurate abstracts in which the mathematical progress is given verbal meaning. There is not yet enough of this available, but we include what we have.

In the circumstances it is surely best to commence one's re-education boldly by understanding how the actual delivery of our minds was most fundamentally brought about, namely, in the three aspects of science, commencing with critical events in physics. The reading essential for that first and most important of liberating movements is justified and listed a few paragraphs forward, after we introduce the sections devoted to reading in the sciences by a brief identification of the main theme.

Such identification is needed, since what we here attempt is intended as help for the general reader as well as for faculty members acting upon committees on integration of improvised curricular revision. We all require as much help as we can get, but the reader not equipped with philosophy has a special problem: He has to bring himself up to date in nearly every field of general information, because integration implies some notion of the whole of knowledge and all forms of experience. The philosopher may have the special impediment of dependence upon speculation, but he has as compensation constant familiarity with generalizations, even if those he uses appear today less effective than before. For him the reading sequence we adopt here should be best, as it commences with the data which head us directly out of the old limitations. For others the beginning might be made with item six, before taking up one to eight in the following systematic collection of sources.

1. Authoritative accounts of critical intellectual and scientific recent events, especially in physics, biology, and psychology.
2. Comparable records of equally critical social, economic, and historic events.
3. Provocative and competent discussions which estimate philosophically the revolutionary meaning of various portions of the first two topics.
4. Studies of new fields which the critical events brought into being.
5. Analyses of past philosophical efforts re-considered in the light of the intellectual and social revolution.
6. Reviews of special subjects by contemporary authorities who reached maturity before the recent changes, who can best bring us up to date and testify to the sweeping import of new events.
7. Studies in the principles of the arts, and
8. the truths of comparative religion, assuming that the laws of science and the universals of philosophy have been dealt with in the earlier reading.

In this issue of MAIN CURRENTS we have room only for bibliographic notes on a small part of the first, and a few on the seventh, and eighth items. The present suggestions for reading are intended as specimens with which to make a beginning, and the arrangement anticipates insertion of more volumes into the discussion as well as additions to the general list at the end of each section. The books at the head of each list are usually of first importance to the work in hand, the revelation of space-time properties in Nature, in human form and affairs, in universals. On later occasions the outline will be completed and expanded into details fitting the whole argument together with explicit data, and discussing great subjects such as evolution, development, symbiosis, in the new state of mind. Thus sub-departments in the curriculum will be brought in, especially those important to man; human differentia in histology, embryology, and so on.

### The Main Theme in Reading

The intellectual revolution is multiform, but its force stems from the final dissipation of crass matter into electronic and nuclear systems in a field of energy, broadly of the nature of light, electromagnetic. This generalization is achieved through an argument resting upon a fateful assumption that light is a constant and the highest possible velocity in Nature. This is the *phenomenon* of our times. Phenomenon (literally, that which shows, shines) was associated in the Greek mind with the word noumenon, signifying intelligible or mind stuff. We are thus back upon the Platonic position, but with new authority. For we too now know the universe is intelligible, and the physical world the end-product of light.

This revolution in physics was accompanied by quite as remarkable discoveries in biology (chromosomes, genetics, individuation fields), and in psychology (unconscious, super-conscious, Gestalten, closure), and the sum-total of these changes affords us ample occasion and necessary means for the inquiry into the noumenon.

The noumenon turns out to be approachable through a space-time matrix endowed with ideal properties of its own, which are revealed in parts — and in increasingly significant parts — by the material, living, social and creative activities of the universe.

Since this much consonant with older views has been fragmentarily detected by present intellectual leadership in a few of its quasi-Riemannian features, we propose to call to our aid all insight available, old and new, Eastern and Western. Our charter to do so is ample. Since today's scientific data take us back to the position of Plato, Buddha, Jesus and Shankaracharya, reasonable minds must admit that if the sages were so right in the very matters which are the triumph of modern inquiries, then we are entitled to have some confidence in them as regards other doctrines in which they unite, where we have as yet inadequate information.

The intuition of the ancients was that space is Euclidean and time curved, hence their doctrine of cycles and aeons, prompted no doubt by observation of Nature. Following this suggestion, we should find the features and behavior of those entities of greatest space-time significance displaying a duality, the spatial determinant



being a symmetry which must express itself physically as symmetrical form and as harmonic series, accompanied by temporal variations on that fundamental scheme.\*

The ancients were clear on one other point: Although the physical universe betrays in part the properties of the matrix, it does so in terms of succession. In itself, the absolute, noumenon, was not to them a synthesis made up of partials. In itself, it was whole. We may start by conceiving that latent order of the space-time lattices as if it were a frame on which the external universe grows, as morning glory or clematis would cover a frame and both reveal and conceal it. But of course in Nature such bifurcation is needless, as the creature grows its own frame, so to speak. Using again the language of the Psalms, in what we call evolution there is an inward glory which results in an external handiwork. That glory shines through the whole universe. Where the light condenses, matter occurs. Life and man reveal further fullness of the glory, for here too the goings-on in the handiwork betray and conceal the order ever there to express itself in the smallest and largest, the microcosm and the macrocosm. Thinking of law in terms of time-sequence, it has been well said by R. A. Samson, Astronomer Royal of Scotland, in connection with the successive discoveries of Uranus, Neptune, and Pluto as parts of the solar order, that though high originality was required, "the past was so sure that, to right minds, it suggested the future."

To get some idea of the latent order, primary topics, in science reading especially, are to be approached *de novo*. Though we propose to use scientific standards and sources until we exhaust their philosophically significant materials, we propose to go on to other experience after surveying all essential principles having general scientific acceptance. And even while incorporating the well known kinds of data, we need to be active in challenging premature assumptions, whatever the origin. There is, for instance, no experimental justification for a belief that life is but an epiphenomenon of energy, or for the devaluation of every aspect of human nature to biological process. This is not scientific theory, but unwarranted substitution of so-called scientific philosophy for the philosophy of the whole. The opposite error arises from speculative monism. No doubt energy, life, and humanity do inhere in a common ground, but this is to be demonstrated, not believed. We would like to accept the challenge of recent advances in science and to confirm the expectations of monists by showing that there is a one-and-the-same rational and aesthetic continuum operating beneath and through things, but that the connective tissue of this deep and wholesome organism is not an unvalued and odious materialism, not a cold and diaphanous energetics, and least of all to be understood by exclusive study of its mathematical skeleton. This means an arduous life and a devoted inquiry, for which the first step is the separation of good data from misleading contexts of all sorts. It also means,

\*The basic reason why events governed by four-dimensional frames have this symmetry and harmony is quite simple: The diagonal of the hypercube is a rational number, namely two, if the side is one, but the diagonal is irrational in the three dimensional cube and in the two dimensional square. Since the diagonal of the hypercube is the octave number, it follows that studies of phenomena which are large enough in their space-time scale must reveal octave and harmonic principles. This does not prevent many partials from being dissonant.

further along, actual changes in daily living. For if each desires to go on doing what he now does, the world will go on to its unpleasant destiny of more violence. If philosophy is to be of any use, it should prevent a person from going on as he is, and awaken him to the fact that expecting the other fellow to change first is furious nonsense or injurious pretence.

## CRITICAL EVENTS IN PHYSICS, and Notes on the Physical Field

Physical science is measurement of objective matter and energy, and includes deductions and calculations from their behaviour under various conditions in order to arrive for practical and theoretical purposes at good generalizations summed up in words such as motion, energy, and electromagnetism, each a cluster of lesser concepts, in turn constellations of laws, and points of fact.

Certain objects of physical observation are disqualified from classification into the various departments of the physical sciences, because such disbarred subjects can not be significantly studied under varied and variable conditions (temperature, pressure and the like) found in Nature or employed by the physicist for his purposes. A raw egg is of minor professional interest to a physicist. Boiled, it takes on significance.

The objects of observation thus disqualified form a residue we shall describe under biology and psychology, where we shall show that the relations which they have to space and time make them so indispensable for good over-all concepts that any ideas based on physics alone are quite misleading.

Returning to the generalization called motion, energy, and electromagnetism, if we call the whole of this field physics, then astronomy, parts of chemistry, meteorology, geology, geotectonics, geography, and so on, are departments (of man-made convenience, of course, and not sacrosanct), and physics thus embraces the bulk of terrestrial and all celestial objects. Only two relatively minute masses, life and man, are ruled out.

The critical changes in physics from emphasis upon mechanics, gravitation, etc. to electromagnetism, which occurred in the ten years prior to 1905, are well known. If more information is required, any good recent edition of a college physics text will review the body of information: COLLEGE PHYSICS, Arthur L. Kimball, Holt, New York, 1923 and later. See also THE STRUCTURE AND PROPERTIES OF MATTER, Herman T. Briscoe, McGraw-Hill, New York, 1935, and other works in that series. We need from some enterprising publisher a modern version of a book now out of print, LAWS OF PHYSICAL SCIENCE, Edwin F. Northrup, Lippincott, Philadelphia, 1917. Herein is collected a variety of laws and principles, crisply stated verbally, and accompanied by their equations, where such exist. A collection of these as of today would be invaluable, especially if accompanied by graphs or other visual interpretations whenever possible. The body of natural laws in physics is now quite large, especially if we include the constants as evidence of law. Perhaps the collection should be in small volumes, grouped by signi-

ficant relations, electromagnetic, thermal, etc., to bring out the orchestration of principles throughout the universe, and done in a framework of the meaningful hyper-physical.

The recent revolutionary events in physics came in 1905, 1907, 1909, 1910, and then 1915. These need close consideration. The original papers of Einstein, which began and then enlarged the shake-up in physical theory, have been gathered together in one volume along with the contributions of Lorentz and others: *THE PRINCIPLE OF RELATIVITY*, Albert Einstein and others, Methuen, London. Much can also be gleaned from *THE EVOLUTION OF PHYSICS*, Einstein and Infeld. Best of all, a close reading of a recent book will supply the reader equipped with algebra with a good idea of the transformation in astro-physical science views as a result of these events; and we add a second volume (only for the record, for it is in terms of advanced mathematics) to complete the tale, in the parts referring to the physics of the microcosm: atoms, electrons, quanta, etc.: *THE EINSTEIN THEORY OF RELATIVITY*, Lillian R. Lieber, Rhinehart, New York, 1945. *THE ELEMENTS OF THE NEW QUANTUM MECHANICS*, Otto Halpern and Hans Thirring, trans. from the German by Henry L. Brose, Methuen, London, 1932.

For our purposes, the crucial event is in Minkowski's development of time as a dimension. We take this as a great principle, standing up above the detailed assumptions about lines of finite length, which have not so far led to a unified field theory of electro-magnetism and gravitation. Since the original papers of Minkowski, which constitute exactly the break-out from the three-dimensional world to the hyper-physical, mark the sharp corner of the turning we propose be taken deliberately, we list the sources for them separately here in their original places, merely to make an exact record of this release from intellectual bondage: *Göttingen Nach.*, p.1, 1907; *Phys. Zeit.* 10, 104, 1909; *Math. Annalen*, 68, 472, 1910.

## ART NEARS FULL CIRCLE

During the late 19th century and continuing up to the present art has undergone a radical re-direction which has given rise to a quantity of discussion probably never before equalled during a like period of time on the same subject. The volume has been exceeded only by the temperature, and while the principal battles appear to have been won by the innovating artists, there are still to be heard occasional faint cries of outrage. The exhilaration occasioned by such superheated combat is enlivening, but one may doubt if much sound evaluation of principles has come out of such fierce partisanship.

The distinguished English critic, Herbert Read, writes; "Like many people, I enjoy modern art with an enthusiasm which I try to keep free from intellectual prejudices," and goes on to say that whereas positive criticism begins as an impulse to defend one's own instinctive preferences, true criticism reaches beyond any individual's tastes, to the universal, philosophical, and scientific; and that although it is commonplace to bring philosophical, psychological, and scientific knowledge to bear upon the study of literature, this has not been systematically done sufficiently in criticism of other arts.

But we cannot be content with the special kind of geometry used to fuse space with time up to date. It has not brought off, we repeat, an over-all concept for physics. In any case such a commitment is improper philosophy, for biology and psychology are not subject to the limitations imposed on thought by physics. A small book, effectively illustrated and displaying no special technical problem, will enable the determined general reader to appreciate why even a successful development of a unified field theory for physics is likely to leave biological principles outside the scope thereof: *WHAT IS LIFE?* Erwin Schrödinger, Cambridge University Press, London, 1945. This may be read conjointly with *THE SOUL OF THE UNIVERSE*, Gustaf Stromberg, Mackay, Philadelphia, 1941.

Before passing on to biology, some indications may be made of the manner in which some of the properties of space-time may be made clear to the layman by a study of the greatest generalizations in physics. There is no point in incorporating lists of technical works which effect this for persons able to read them to advantage. We might mention, however, one recent application of quantum theory, which shows that the fundamental coherence of a material universe is only possible on what resembles acoustical principles. The actual linking processes of valence, which gives us the principles by which matter coheres, are today referred to as energy transfers by resonance. Roughly, atoms can build up into stable structures because of a principle something like that which allows of one tuning fork passing on its energy to another of identical pitch, and recovering it again, and so on until the energy is dissipated. This is resonance. The following is a work describing this principle as giving rise to the octahedral, cubic and tetrahedral structures which are characteristic of non-living matter: *THE NATURE OF THE CHEMICAL BOND*, Linus Pauling, Cornell University Press, Ithaca, New York, 1944.

(TO BE CONTINUED)

Louis James

It is true that some western philosophers have had much to say about the aesthetic experience, and Dr. Ananda Coomaraswamy has, in his extraordinary writings and translations, brought to our attention the profound and detailed aesthetic analysis of the Orient. But these are far too little generally known, and there is a need to see where we are in aesthetic development, particularly in regard to recent schools of painting, and as an index for all arts, and assuming that art expression is part of the whole social transition.

In the rediscovery of elemental force and structure, modern art can be said to have come full circle. The art of the late Paleolithic, Neolithic and the Great Bronze ages was almost exclusively non-figurative, abstract and symbolic. The early Chinese, as communicated to us in the I'Ching, developed an elaborate "algebraic" system of examination of the Universe and Man, in terms of abstract devices which are as beautiful as they are modern. The close similarity of feeling evoked by certain Shang bronzes, and some modern sculpture and architecture is evident to everyone — and who can estimate their direct or indirect influence? All of this early abstract art was

concerned with what we might feel impelled now to call pristine religion and animistic philosophy, but we note that it was as little expressed in anthropomorphic or theistic forms as the findings of the modern physicist.

The Supreme Celestial Power is represented as a circle; which became two mutually accommodating forces, positive and negative, whose interaction brought forth germs or atoms in space, from which everything is compounded. As the Symbol of Heaven we have the Pi, a flat disc with a central opening through which the positive, or masculine, invisible Power was imaged as a pole or axis setting up a churning which resulted in the material universe, a solar system with its planets. The Square was the stable Earth, and the sculptured Earth-Symbol had a hole drilled through it to indicate that the apparently solid is based on immaterial Force. Thus we see the ancients, and persisting to our own day in folk arts of various countries and the Art of the American Indians, using all the geometric elements, circle, point, line, square, triangle, the zig-zag, whorl, cross. Only later did more literally-minded cultures resort to humanized iconographs to express the mysterious universe about them. Despite such diversions, it is possible to see throughout the whole of thousands of years of the history of art, the metaphysical and metric essential quality, which in front of these earlier works of man so deeply moves us. When we see this we perceive a principle which does not seem to have changed at all. Dr. Coomaraswamy has likened art to a great sea to which many cultures have come bearing all manner of vessels, of wood, of silver, of gold, and yet it is always the same water. The development of art in time seems to have taken the form of cyclism from the center to a periphery, reaching about the time of scientific materialism in the last century its all-time lowest point of empty realism, a lifeless realism to which even the camera has never descended.

The excess produced its own corrective. In the intense effort at realism, the painters' subjects suddenly dissolved into a flurry of impressionist dabs of color, paralleling the atoms of the physicist, and the greatest revolution in the history of art was on. In perspective we see it as a part of a whole social return to sources, just as electronic physics has discovered that atoms obey mathematical laws, and that the forces which are involved are of cosmic order. Cezanne, deeply disturbed by the colored snowfall of the Impressionists, began to produce canvasses in which the coloured particles were so powerfully knit together, his forms so substantial that they were permeated by a vibrant energy transcending anything in art before him.

For this obedience to the spirit of the times, the Impressionists and Cezanne were abused. However, they obtusely went on painting, Cezanne prophesying that he was "the primitive of the way," and in his later almost purely abstract painting and his statement that everything could be reduced to cylinder, cone, and sphere, opening the door for a whole new series of revolutions. Out of Cezanne's vibrating mathematics, the nervous vitalism of van Gogh, and the mysterious emotional undertow of Gauguin, were to come a numerous progeny of so many complex and overlapping arrays of intentions that it is practically impossible to separate them fully for labelling. Three main groups have been recognizable, Cubists, Expressionists, Surrealists, and a fourth, the youngest and most promising, the Non-Objective school, dealing with pure elements. Thus we round out with new gains the circle which commenced with the Stone and Bronze Ages and the Ancient Chinese.

From this we conclude that painters are not intended to record the transitory appearances of things; they are philosophers and seers concerning themselves with the spirit. In retrospect Cezanne proves to have been prophetic in fact as well as word, and from his work and influence Picasso and Braque brought forth Cubism, van Gogh influenced the rise of Expressionism through Soutine, Kokoshka, Kandinsky and others, Surrealism came out of Gauguin, Rousseau and Redon; and so we witness the influence of Malevich, Mondrian, Kandinsky, Bauer, and others developing the Non-Objective School.

Kandinsky, who was a Russian, began as an Impressionist, and rapidly progressed through Expressionism to a period of canvasses in which he aimed to achieve the freedom of the

modern musician. These large paintings may very well be described as painted symphonies. We observe in color and form an art between music and architecture, commencing what many believe will become the major artistic force for the future.

Why may this be expected? Because the whole non-objective development marches upon today's frontier, along with scientific and other experience, feeling for the underlying laws of Nature in terms which are appropriate to the medium. In the account of his life, in the Memorial edited by Hilla Rebay, and published by the Solomon R. Guggenheim Foundation, Kandinsky traces his own self-discovery, and describes his true purposes: "The much-discussed nervous exaltation, inherited from the 19th century, and which has produced at various times many fine, if never great, works in different fields of art, is gradually disappearing from the scene. It appears to me, that the age of inner certainty and spiritual knowledge is drawing closer. It is these alone that can give all artists that necessary, steady, and balanced uplift which is essential to all works of inner complexity and depth."

Kandinsky is speaking of a stage of self-realization deeper than the exaltation he refers to.

We can see another differentiation if we trace what happened to the Surrealists. That school bifurcated in the two principal directions of symbolical super-realism, typified by Salvador Dali, and what might be called Expressionist or semi-abstract Surrealism of Miro, Masson and Matta. Much of the work of these schools is of a very high order, but the work is often achieved by attempted dubious delvings into dreams and the unconscious, in emulation of Freud and the psycho-analysts. Implied in this approach in painting seems to be the notion that the artist should regard himself as a kind of glorified spiritist medium, or psychic weather vane, with no will or direction of his own, and to further complicate the imagery that he should gladly welcome and depict in loving detail whatever queer birds or bats, verminous though they be, which inhabit his emotional belfry. In this manner, on occasion, creatures of breathtaking beauty sometimes make their appearance and when they come from a painter like Dali, possessed by an illumined virtuosity and downright genius, the most horrendous subject matter seems magically, if not spiritually transfigured. When Surrealism succeeds in depicting conflict, frustration, and all the evidences of fear and neuroses illuminated with this superphysical quality, one might suppose the aesthetic resolution, by means of the objective focussing of the conflict in a painting, might have therapeutic value to the artist who suffers from the neuroses. But we must consider the observer as well. There is evidence that some people experience depressing reactions for some time after looking at these works. Hence a real danger lies in making a cult of melodramatic psychic effusions. The painting done by very young students in one Eastern art school were observed to be violently and repellantly Surrealist, in emulation of an instructor's own painting. Surely this indicates a total misunderstanding of the creative process and of the proper teaching of art.

This element of violence and disturbance, coupled with cynical pornography, in so much of contemporary painting deserves a good airing, not on censorious moralistic grounds, but from the standpoint of psychic health. Here again principle can be our guide.

Ancient Greek and oriental art abounds in the pole symbol, Shivalingam, and other sexual symbolism, yet the intent even of the Greek vases cannot be considered pornographic. The Greeks, the Orientals, and the ancients generally considered the sexual experience a part of and a symbol of the whole creative movement of the universe, and more particularly as an earthly reflection and symbol of the relation of the religious devotee to the divine inspiring power, or the abstract vital principle. The Rubaiyat and the Songs of Solomon are thus mystical poems having a sublime meaning as well as the material import seen by those who cannot rise to their higher sense. The violence, rotting flesh, deformed bodies, pornography, and underlying unhealthy emotional tone of so much contemporary art are symptomatic of two things: of the conflict, competition, and cynical misunderstanding and misuse of sex in modern times; and of a commendable freedom



from censorious taboos, artists feeling free to put down what they feel and not afraid to show and admit their feelings. This latter is all to the good. Yet there is considerable doubt that expressing negative and destructive tendencies is a fit basis for art, or is the best or even in the long run a possible, way of overcoming inner conflict. However high the qualities of color and space organization in a canvas, if the underlying, even if unconscious, emotional and mental motivation is unwholesome, the work suffers from rot at its core.

The psychological problem involved in the artist's relation to his internal aspirations and conflicts are of universal importance. In fact, much of modern art clearly objectifies in pictorial form the conflict both within individuals and in the world as a whole. The inner conflict revealed in art cannot be said to be wholly caused by the war and disturbed world conditions. The world condition may equally be said to be an accumulation of the confusion in the lives and thoughts of the individuals making up the world. The artist only shares in a general responsibility. But he does share. What is his part, then?

Attribution of any moral or ethical significance to art is still not fashionable, as we painfully remember the Victorian moralists and story-telling painters. The ancient Chinese with their constant reiteration of duality in unity in their art and symbolism, and the philosophers of India and Greece along with them held the key. For them there were two apparently opposing powers in us, one masculine, positive, aggressive forceful, destructive unless balanced and harmonized with a feminine, ordering, yielding, non-resistant matrix. This simple principle was stated as the basis of art, as of everything else. If artists are permeated by a good philosophy and metaphysics, this serves as a kind of refined discriminative sieve, and they and those who look at their work are happier as people, and the quality of their work improves. Every second of our lives we are choosing our psychological mood, whether we know it or not, either negatively towards confusion, greater depression, frustration, irritation, or towards awakened creative use of our emotions and thought.

The noblest men who have lived, Jesus, Plato, Buddha, Walt Whitman, Rodin, Shelley, Spinoza, out of hundreds, reported the heart of their natures identified with an integrative wisdom which, used in guiding their lives, led to the highest results. Creative artists testify to this. Coomaraswamy, in his work, *Why Exhibit Works of Art?* quotes Dante: "I am one who, when Love inspires me, take note, and go setting it forth in such wise as He dictates to me." (*Purgatorio* xxiv, 52-54); and in his *Transformation of Nature into Art* quotes Meister Eckhardt: "There is a power in the soul called mind; it is her storehouse of incorporeal forms and intellectual notions." In the words of Rodin: "To me religion is more than the mumbling of a creed. It is the meaning of all that is unexplained and inexplicable in the world. It is the adoration of the unknown force which maintains the universal law and preserves the types of all beings; it is the surmise of all that in nature does not fall within the domain of sense, of all that immense realm of things which neither the eyes of our bodies nor even those of our spirit, can see. It is the impulse of our conscience towards the infinite, towards eternity, towards unlimited knowledge and love . . . and in this sense I am religious."

The confusing preachment, more popular a few years ago than at present, that beauty is not necessarily the business of art, would have been merely foolish if it had not made for so much misunderstanding. It is true that the world beauty, and actual conceptions, had become so sentimentalized that rank ugliness was rightly regarded as more honest, and as a reaction artists revelled in the unsentimental. It would be a good thing perhaps to find a word that is a fit substitute to describe the quality of beauty, but since there seems to be none, a terse re-definition will be needed to counteract its fallen state. In the last century, and persisting even now, people insistently associate beauty solely with the romantic, as the Victorian period tended to be romantic in its worst sentimental sense. Art and music were something to cause one to shed synthetic tears.

Modern painting, in its insistence on structure, has returned to older and more enduring conceptions of the beautiful which valued the idea of excellence and order. Actually

an essential part of the aesthetic sense does seem to be based on the intellectual, or at least intuitive sense of order. This is the sense of the famous remarks of Socrates in Plato's *Philebus* concerning "straight lines and curves and the surfaces of solid forms produced out of these by lathes, rulers and squares . . . For I mean that these things are not beautiful relatively, like other things but always and naturally and absolutely, and they have their proper pleasures, no way depending on the itch of desire, and I mean colours of the same kind with the same kind of beauty and pleasures . . . I mean that such sounds as are pure and smooth and yield a single pure tone are not beautiful relatively to anything else but in their own proper pleasures."

This sense of the beauty of straight lines and curves and surfaces or solid forms produced out of them is not something which can be sensed merely because it has been mentioned in some art appreciation course. One has to slough off superficiality, and dig down to a deep and bedrock simplicity and strength in both feeling and thought. The average person is so in the habit of associational thinking about art, remembering something they have seen before, that he may not give undivided mind and feeling to these informing elements of painting, the ultimate principles.

All art, regardless of period, is actually great in terms of these elements. Thus we account for the fact that the art of some of man's Primitive periods impresses us more deeply than the superficially emotional and accomplished works of more sophisticated times. Coomaraswamy quotes in this connection Augustine's words "O eloquence, so much the more terrible as it is so unadorned; and as it is so genuine, so much the more powerful! O truly the axe hewing the rock!"

Ancient cultures, undistracted by the clutter of unessentials of our superficial lives, and deeply involved in the phenomena of nature and in the consciousness of the group of which they were a part, arrived at a depth of thought which we are only beginning to appreciate. The art of children exhibits a force and direction which only too often disappears when they get involved in the rigamarole of a mismanaged education.

The principal problem the artist has to face has always been the spontaneous evocation from within himself of the informing force which gives meaning to his work, and the experience of which is the goal of all his travail. The nature of this force and experience is ultimately the only problem there is in art. All matters of subject matter or its absence, drawing, form, color, or medium whether it be paint, stone, wood, language, movement of the body, or music are of secondary rank.

The very nature of art, then, involves the precipitation of an ineluctable, spiritual essence, through the intermediation of the intuition, thought, feeling and action of the artist, into a tangible form, which others may experience. The nature of this process obviously involves the coloration of the art with the unique emotional or mental quality of the artist. Although the human consciousness is a unity, it plays through various levels more or less in harmonic or conflicting relation. This is a commonplace of psychology and of everyday human experience. A knowing examination of art indicates very clearly the particular level or levels from which the work emerges, and reveals the degree of integrative wholeness or of conflict of those levels. That these levels exist is amply documented by Freud and others who have depicted the anatomy of the mind. (See *MAIN CURRENTS*, July, 1946 and April 1946, page 46 for an integrated pattern of the elements of human knowledge.)

The problem solved by constancy to elements and principles in art is at least partial correction of personal distortion by implication of the whole. No configuration, whether it be in a work of art, a person, or a society can be truly understood unless properly related into the meaningful whole. All failure, weakness, conflict, war, and bad art are the result of lack of a sense of proportion and integral relation of parts within wholes. Wholeness is the world's great need. The function of art, as of all other human activity, is to add to the happiness, well-being, health, and spiritual insight of humanity as a whole, for the artist and the lover of

art alike, and, the pursuit of art for any other purpose than the truest spiritual self-expression of the artist can only lead to perversion of art for selfish, ostentatious, or corruptive commercial gain.

Man has displayed the richness of his nature in all the associations and experiences connected with art, human love, beauty, and sympathy, pleasure in textures, materials, delight in fresh and original talents, the age-old associations of religion, the splendour of courts and ancient dynasties. He has drawn on all the wonder surrounding him in flower, leaf, insect, tree, and rock, and all the vast spaces of the universe. How is it he has ever come back from pre-occupation with vast detail to simples of line and form? Why do the elements of primitive art appeal to us? Because at the apex of our being we are at one with this unity of things. As Socrates found, the true nature of the pleasure in our deep response to color, line, plane, and form is difficult to express in words. In some way space, color, line, plane, and form are profoundly rooted in the universe and in ourselves, else the colors, lines, planes, and forms we perceive in nature and in art could not so profoundly move us. Art is the process of evoking our deepest spiritual sense in form and color and the going on to the realization of still more profound and exhilarating accomplishments. In this sense all life is art, the essence of art is the same perfection in the incomplete, and rightness in the unfinished, which ethics demands of evolving man.

This matter of return to the elements is a practical social urgency. A large part of the artist's unhappiness results, as it does in others, from his anomalous position in the economic sphere. He is forced either to work, or teach, so that he has no time for his art, or he may refuse to spend all his time at

his job and suffer privation and damage to his psychological and physical health. During today's transition, schools and employers should help the artist by supplying him with adequately paid part-time employment, and education should encourage people to spend in art even a small fraction of what goes to cigarettes, hats, cosmetics, liquors, commercialized sport, and meretricious entertainment. The fact that artists in all fields, with less recognition than any other field of human endeavour, continue to devote their lives to their art out of deep compulsion should set them on a somewhat higher level than they are generally accorded. The development of public taste is rapidly proceeding, and these abuses may presently be greatly ameliorated.

Even more fundamental changes in the status of the artist are impending. Beauty and functional form are now admitted correlates. Someone has well said: "Industry without art is brutality." It may equally be said that ugly industrial products are poor economic risks. Aeroplanes were once unlovely and impractical kites. Today these are like great, rigid, archetypal birds. Tomorrow they will be like meteors. In a peaceful global society the universally true principles of beauty will be necessary to industry. Hence the return to ultimates in contemporary art can be taken as a signal that production will be one day governed by engineers produced by an education suited to evolve their aesthetic taste no less than their mechanical competence. Today the names of Wassily Kandinsky, P. A. M. Dirac and Henry Keyser may be an incongruous association to us. Tomorrow may show that they and others of our contemporaries are some of the agencies in the restoration of his humanity to man in terms of a freedom in which body and soul alike participate.

## THE MANY ARTS ARE ONE

The foregoing analysis forecasts the imminent return, via subjective art, to a re-discovery of nature's deepest principles in her geometry, color, and harmonic velocities, and in the sounds and devices elaborated by man from his deeper contact with the universe. The study of this development as represented in painting will be found, with a collection of reproductions, with biographies and a bibliography, in *CONTEMPORARY ART*, Rosamund Frost, Crown Publishers, New York, 1942. Also comprehensive is *ABSTRACT AND SURREALIST ART IN AMERICA*, Sidney Janis, Reynal & Hitchcock, New York, 1944, with a section on sources in Europe. Hilla Rebay, Director of the Museum of Non-Objective Painting, New York has edited a memorial to Kandinsky, 1945, and published a translation of his books, *ON THE SPIRITUAL IN ART*, *HOMAGE TO KANDINSKY*, and a volume of collected papers by him. From the same source will be published *POINT AND LINE TO PLANE* by Kandinsky, from which we have the privilege of reproducing the colored cover plate in this issue of *MAIN CURRENTS*.

*Principles of Art*, more generally, means for the studies outlined in this issue of *MAIN CURRENTS*, the true elements in each art which resemble those in others, are usually fundamental (though with varying emphasis according to the sense appealed to), and which have mental terms of reference which reach over to laws of nature, universals, and the unknown—hence to science, philosophy, and religion. Of major import for us is the place of symmetry, proportion, harmony, and other essentials in the several arts. These equate directly to like principles used in the most advanced forms of contemporary science. (See the discussion of Harmonics, and the bibliography thereunder.)

It is a notable fact that the human sensory equipment tends to work out systematically in scales. Octaves and overtones in music are the most expanded series, running to several octaves. This fact, and the bodiless character of music, give it a central position and high rank in proposed aesthetic exploration. Color vision uses a single octave in the electromagnetic spectrum, but intensity and relative values give other dimensions in painting, perspective and other structural elements relating this art to nature, to architecture and the like. The parallels of literature to music are obvious in the terms used

## A Brief Bibliography

in musical analysis: phrase, cadence, passage, etc. (See *MAIN CURRENTS*, April, 1946, pp. 40, 41). Touch, taste, and smell have been studied in terms of scales also. The latter has been most successfully disposed as an octave on a prism by Henning (*MAIN CURRENTS*, January, 1944, p. 16). We may suppose there is a connection between these sensory orders and art principles, via our capacity for abstracts and universals.

The advantage of art in this connection is its freedom of exploration and in expression. It displays what the emotions can state of the potential of man, without waiting upon that plodding logic natural to pedestrian material science. Art expression obviously is put through a human personality and thus it brings with it the advantages and limitations of that artist. This is no less true of creative than of interpretative moments. But what makes *an* art, as a whole, are universals intuitively perceived, however varied by freedom, imagination, or other enlargements. As a major means to appreciate the deeply buried element common to man and Nature, the examination of aesthetic universals is especially important now, while physical science is wrestling with the prodigious work of fathoming the laws of Nature in their roots in the harmonic under-structure, and while psychology examines other levels than the unconscious in man, and biology enters into its own as a major contribution to philosophy. We limit the following list to works specifically important for the purposes referred to above:

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## THERE IS A WORLD FAITH

At the World Faiths Conference, Town Hall, New York, September 8, 1946, Mrs. Ruth Cranston identified ten points upon which representatives of the Hindu, Buddhist, Confucian, Jewish, Moslem and Christian faiths have agreed, affirming that they would be acceptable to their people everywhere. We cite them from the *Bulletin* of the Laymen's Movement for a Christian World.

1. The Unity of all Life.
2. The Interdependence and Brotherhood of All Men.
3. Love and Service to Fellow Man: Not domination and attempted power over him.
4. Non-Violence and Non-Injury: No More War or Killing.
5. Help—not Exploitation—of the Weak and Backward.
6. Purity—and Personal Disinterestedness.
7. True Riches and True Happiness are Within.  
 The object of life is not a mad race for the accumulation of money and material things. The true kingdom of heaven is within you. The goal of life is the fullest development of man's highest powers—mental, moral, and spiritual.
8. The Worth of Individual Man and the ability of every man to attain states of life far above those he is now experiencing. Discipline and purity of life are necessary for this attainment: the leaving of a lesser life to gain a greater.
9. The Immortality of the Soul—and ultimately:
10. The Union of Man with God: the final truth of every religion.

The following quotations from the scriptures of the greatest living religions will serve to illustrate their agreement upon the ten points which Mrs. Cranston has enumerated. Even a superficial reading of these scriptures reveals that all religions postulate the interdependence of all life, based upon one sublime, self-created Source (number 1 in the above list); that man is in his essential nature one with this Source and therefore one with all his fellows (number 2); that religion, if truly perceived, must be a way of life (numbers 3 through 8); and finally, that the end and aim of existence for man is Union with God (9 and 10).

For the benefit of those who care to possess in compact form a comparison of this order, one or other of the following will be found useful:

The Eleven Religions, a comparative study by Selwyn Champion, M.D., with a foreword by Rufus M. Jones, N. Y., Dutton, 1945.  
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### 1. THE UNITY OF ALL LIFE

#### Hindu:

One only, without a second.—Chhandogya Upanishat, vi, ii, 1.  
 I, O Gudakesha, am the Self, seated in the heart of all beings; I am the beginning, the middle, and also the end of all beings . . . Nor is there aught, moving or unmoving, that may exist bereft of Me . . . Whatsoever is glorious, good, beautiful and mighty, understand thou that to go forth from a fragment of My splendor . . . Having pervaded this whole universe with one fragment of Myself, I remain.—Bhagavad-Gita, x, 20, 39, 41, 42.

#### Christian:

But to us there is but one God, the Father, of whom are all things, and we in Him.—1 Corinthians, viii, 6. I am the Alpha and Omega, the beginning and the end, the first and the last.—Revelation, xii, 13. One God and Father of all, who is above all, and through all, and in you all.—Ephesians, ix, 6.

#### Hebrew:

The Lord He is God; there is none else beside Him.—Deuteronomy, iv, 35. I am the first and I am the last; and beside Me there is no God.—Isaiah, xlv, 6.

#### Moslem:

To God belongeth the East and the West; therefore wher-ever thou turnest thyself to pray, there is the Face of God, for God is omnipresent and omniscient.—Al Quran, ii, 115.

There was God when there was nothing. He knows all things alike before and after their existence. He is light without darkness, life without death, and knowledge without ignorance. As He is today, so He will remain forever.—The 5th Imam, Muhammad, the son of Ali.

#### Sikh:

He Himself is One, and He Himself is many . . . He is always contained in all.—Japji. Signless, that none may cross, unreachable; no object; untouched by time or action; of unborn essence; from no womb; Self-existent; unconditioned; unwavering.—Sorath, i.

#### Taoism:

Tao gives life to all creatures, teh feeds them; materiality shapes them; energy completes them.—Tao-teh-king, li. Great Tao is all pervading! It can be on both the right hand and the left. Everything relies upon it for their existence, and it does not fail them. It acquires merit but covets not the title. It lovingly nourishes everything, but does not claim the rights of ownership . . . Everything returns to it.—ibid, xxxiv.

#### Zoroastrianism:

The origin of Mezdams being none can know. Except Himself, who can comprehend it?—Existence and unity and identity are inseparable properties of His original substance, and are not adventitious to Him. He is without beginning, or end, or associate, or foe, or like unto Him, or father, or mother, or wife, or child, or place, or position, or body, or anything material, or color, or smell. He is living, and wise, and powerful,



and independent, and just: and His knowledge extends over all that is heard, or seen, or that exists.—The Desatir, Book of the Prophet the Great Abad, 4-8.

## 2 & 3. THE BROTHERHOOD OF MAN

*Hindu:*

He who thus seeth the Self in all beings, by his own Self, he realizes the equality of all, and attaineth to the supreme state of Brahman.—Manusmṛti, xii, 125. To him who owneth the wealth of wisdom, the world that is filled with his elders, equals and younger, is as a world of parents, friends and children.—Bala Bharata, Udyoga Parva, ii, 17. Knowing the Supreme to be all beings, the wise extend love to all creatures undeviatingly.—Vishnu Purana, I, xix, 9.

*Christian:*

One is your Master, even Christ; and all ye are brethren.—S. Matthew, xxiii, 8. God . . . hath made of one blood all nations of men for to dwell on all the face of the earth . . . We are the offspring of God.—Acts, xvii, 24, 26, 29. Beloved, let us love one another; for love is of God; and every one that loveth is born of God, and knoweth God . . . Beloved, if God so loved us, we ought also to love one another . . . He that loveth not his brother whom he hath seen, how can he love God whom he hath not seen? And this commandment have we from Him: That he who loveth God love his brother also.—1 John, iv, 7, 11, 20, 21.

*Moslem:*

Mankind was but one people.—Koran, 2, 209. No man is a true believer unless he desireth for his brother that which he desireth for himself.—The Sayings of Muhammed, 1. The best of men is he from whom good accrue to humanity. All God's creatures are His family; and he is most beloved of God who trieth to do most good to God's creatures.—ibid, 8.

*Confucianism:*

Fan Ch'ih asked about benevolence. The Master said, "It is to love all men." He asked about knowledge. The Master said, "It is to know all men."—Analects of Confucius, book xii.

*Hebrew:*

Have we not all one Father? Hath not one God created us? Why do we deal treacherously every man against his brother?—Malachi, ii, 10. The Lord your God . . . doth execute the judgment of the fatherless and the widow, and loveth the stranger, in giving him food and raiment. Love ye therefore the stranger; for ye were strangers in the land of Egypt.—Deuteronomy, x, 17-19. Thou shalt not avenge, nor bear any grudge against the children of thy people, but thou shalt love thy neighbor as thyself.—Leviticus, xix, 18.

*Buddhist:*

Let us live happily then, not hating those who hate us; among men who hate us let us dwell free from hatred.—Dhammapada, xv, 197. As a mother at the risk of her life watches over her own child, her only child, so also let every one cultivate a boundless (friendly) mind towards all beings. And let

him cultivate good-will towards all the world, a boundless (friendly) mind, above and below and across, unobstructed, without hatred, without enmity.—Metasutta, 7, 8.

*Taoist:*

Therefore the wise man trusting in goodness always saves men, for there is no outcast to him. Trusting in goodness he saves all things for there is nothing valueless to him. This is recognizing concealed values.—Tao-teh-king, xxvii.

*Zoroastrian:*

If I have committed any sin against the law of brotherhood in relation to my father, mother, sister, brother, mate or children; in relation to my leader, my next-of-kin and acquaintances; my co-citizens, partners, neighbors, my own townsmen and my servants—then I repent and pray for pardon.—Patet Pashemani.

## 4 & 5. NON-VIOLENCE

*Hindu:*

Harmlessness is the highest Religion.—Mahabharata, Anushasana Parva, cxiv. For the well-being of all beings was Religion (Dharma) declared. That only which brings such well-being is Religion. This is sure . . . For the making harmless of all beings was Religion declared. That which secureth preservation of beings is Religion. This is sure. He who is the friend of all beings; he who is intent on the welfare of all with act and thought and speech—he only knoweth Religion.—ibid, Shanti Parva, lxxxviii.

*Buddhist:*

All men tremble at punishment, all men fear death; remember that you are like unto them, and do not kill, nor cause slaughter.—Dhammapada, x, 129.

*Hebrew:*

They shall beat their swords into ploughshares, and their spears into pruning hooks; nation shall not lift up a sword against nation, neither shall they learn war any more.—Micah, iv, 3.

*Christian:*

Let the peace of God rule in your hearts, to the which also ye are called in one body.—Colossians, iii, 15. The fruit of righteousness is sown in peace of them that make peace.—S. James, iii, 18. Ye have heard that it was said by them of old times, Thou shalt not kill; and whosoever shall kill shall be in danger of the judgment. But I say unto you, That whosoever is angry with his brother without a cause shall be in danger of judgment.—The Sermon on the Mount.

*Taoist:*

Peace and quietude are esteemed by the wise man, and even when victorious he does not rejoice, because rejoicing over a victory is the same as rejoicing over the killing of men.—Tao-teh-king, xxxi.

*Moslem:*

God will heal the bosoms of a people who believe, and will take away the wrath of their hearts.—Koran, 9, 14-15.

(TO BE CONCLUDED)

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